

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF WASHINGTON  
AT SEATTLE

UNITED STATES OF AMERICA,  
Plaintiff, and  
COMMONWEALTH OF  
MASSACHUSETTS, ET AL.  
Plaintiff-Intervenors,  
v.  
SAINT-GOBAIN CONTAINERS, INC.  
Defendant.

Civil Action No. 2:10-cv-00121-TSZ  
CONSENT DECREE BETWEEN  
PLAINTIFF UNITED STATES OF  
AMERICA AND DEFENDANT  
SAINT-GOBAIN CONTAINERS, INC.

CONSENT DECREE BETWEEN PLAINTIFF UNITED STATES OF AMERICA ET AL.  
AND DEFENDANT SAINT-GOBAIN CONTAINERS, INC. - 1

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## TABLE OF CONTENTS:

|    |        |  |
|----|--------|--|
| 1  |        |  |
| 2  | I.     | JURISDICTION AND VENUE .....8                        |
| 3  | II.    | APPLICABILITY .....10                                |
| 4  | III.   | DEFINITIONS .....11                                  |
| 5  | IV.    | INJUNCTIVE RELIEF .....29                            |
| 6  | V.     | CIVIL PENALTY .....103                               |
| 7  | VI.    | SUPPLEMENTAL ENVIRONMENTAL PROJECTS .....107         |
| 8  | VII.   | EMISSION CREDIT GENERATION .....110                  |
| 9  | VIII.  | PERMITS .....112                                     |
| 10 | IX.    | REPORTING REQUIREMENTS .....114                      |
| 11 | X.     | REVIEW AND APPROVAL OF SUBMITTALS .....118           |
| 12 | XI.    | STIPULATED PENALTIES .....120                        |
| 13 | XII.   | FORCE MAJEURE .....126                               |
| 14 | XIII.  | DISPUTE RESOLUTION .....128                          |
| 15 | XIV.   | INFORMATION COLLECTION AND RETENTION .....132        |
| 16 | XV.    | EFFECT OF SETTLEMENT / RESERVATION OF RIGHTS.....134 |
| 17 | XVI.   | COSTS .....138                                       |
| 18 | XVII.  | NOTICES .....139                                     |
| 19 | XVIII. | SALES OR TRANSFERS OF OPERATIONAL OR OWNERSHIP       |
| 20 |        | INTERESTS.....146                                    |

|    |                                    |     |
|----|------------------------------------|-----|
| 1  | XIX. EFFECTIVE DATE.....           | 147 |
| 2  | XX. RETENTION OF JURISDICTION..... | 148 |
| 3  | XXI. MODIFICATION .....            | 148 |
| 4  | XXII. GENERAL PROVISIONS .....     | 149 |
| 5  | XXIII. TERMINATION .....           | 151 |
| 6  | XXIV. PUBLIC PARTICIPATION .....   | 152 |
| 7  | XXV. SIGNATORIES AND SERVICE ..... | 153 |
| 8  | XXVI. INTEGRATION.....             | 154 |
| 9  | XXVII. FINAL JUDGMENT .....        | 154 |
| 10 |                                    |     |
| 11 |                                    |     |

1 WHEREAS, Plaintiff United States of America, on behalf of the United  
2 States Environmental Protection Agency (EPA) and Plaintiff-Intervenors,  
3 Commonwealth of Massachusetts; Commonwealth of Pennsylvania, Department of  
4 Environmental Protection; State of North Carolina; State of Illinois; State of  
5 Indiana and its Department of Environmental Management; State of Wisconsin;  
6 Oklahoma Department of Environmental Quality; the State of Louisiana, on behalf  
7 of the Louisiana Department of Environmental Quality; State of Missouri,  
8 Department of Natural Resources; Washington State Department of Ecology;  
9 Puget Sound Clean Air Agency, and San Joaquin Valley Unified Air Pollution  
10 Control District have filed Complaints concurrently with this Consent Decree,  
11 alleging that Saint-Gobain Containers, Inc. (SGCI), violated and/or continues to  
12 violate Section 165, 42 U.S.C. § 7475, of the Clean Air Act (CAA or Act), 42  
13 U.S.C. § 7401 et seq., with respect to emissions of nitrogen oxides, sulfur dioxide,  
14 and particulate matter;

15 WHEREAS, the Complaints against SGCI sought injunctive relief and the  
16 assessment of civil penalties for alleged violations of the Prevention of Significant  
17 Deterioration (PSD) and Nonattainment New Source Review (NNSR) provisions  
18 in Part C and D of Subchapter I of the Act, 42 U.S.C. §§ 7470-7492, 7501-7515,  
19 and federally-enforceable state implementation plans developed by Massachusetts,

gc

1 New Jersey, Pennsylvania, North Carolina, Illinois, Indiana, Wisconsin, Texas,  
2 Oklahoma, Louisiana, Missouri, Washington and California;

3 WHEREAS, Commonwealth of Massachusetts; Commonwealth of  
4 Pennsylvania, Department of Environmental Protection; State of North Carolina;  
5 State of Illinois; State of Indiana and its Department of Environmental  
6 Management; State of Wisconsin; Oklahoma Department of Environmental  
7 Quality; the State of Louisiana, on behalf of the Louisiana Department of  
8 Environmental Quality; State of Missouri, Department of Natural Resources;  
9 Washington State Department of Ecology; Puget Sound Clean Air Agency, and  
10 San Joaquin Valley Unified Air Pollution Control District have joined in this  
11 matter alleging violations of their respective applicable implementation provisions  
12 and/or other state and/or local rules and regulations incorporating and  
13 implementing the foregoing federal requirements;

14 WHEREAS, EPA issued a notice of violation (NOV) to SGCI with respect  
15 to such allegations on January 13, 2009;

16 WHEREAS, EPA provided SGCI and Commonwealth of Massachusetts;  
17 New Jersey Department of Environmental Protection; Commonwealth of  
18 Pennsylvania, Department of Environmental Protection; State of North Carolina;  
19 State of Illinois; State of Indiana and its Department of Environmental  
20 Management; State of Wisconsin; Oklahoma Department of Environmental

1 Quality; the State of Louisiana, on behalf of the Louisiana Department of  
2 Environmental Quality; Texas Commission on Environmental Quality; State of  
3 Missouri, Department of Natural Resources; Washington State Department of  
4 Ecology; Puget Sound Clean Air Agency, and San Joaquin Valley Unified Air  
5 Pollution Control District with actual notice of the alleged violations, in  
6 accordance with Section 113(a)(1) of the Act, 42 U.S.C. § 7413(a)(1);

7 WHEREAS, the Complaints against SGCI allege that it made major  
8 modifications to certain major emitting facilities, without complying with the Non-  
9 attainment New Source Review (NNSR) and/or PSD requirements of the Act, by  
10 failing to obtain required permits, install required control technology, meet  
11 emission limits, and comply with requirements for monitoring, record-keeping and  
12 reporting, as specified in the Act;

13 WHEREAS, the Complaints state claims upon which relief can be granted  
14 against SGCI under Sections 113, 165, and 167 of the Act, 42 U.S.C. §§ 7413,  
15 7475, and 7477, and 28 U.S.C. § 1355;

16 WHEREAS, SGCI has denied and continues to deny the violations alleged  
17 in the Complaints and NOV, and maintains that it has been and remains in  
18 compliance with the Act and is not liable for civil penalties or injunctive relief, and  
19 states that it is agreeing to the obligations imposed by this Consent Decree solely  
20 to avoid the costs and uncertainties of litigation and to improve the environment;

1 WHEREAS, EPA has selected glass manufacturing facilities (including  
2 container glass) as a national enforcement priority under the Clean Air Act's New  
3 Source Review Program;

4 WHEREAS, the United States and SGCI anticipate that this Consent Decree,  
5 including the installation and operation of pollution control technology and other  
6 measures adopted pursuant to this Consent Decree, will achieve significant  
7 reductions of emissions from the SGCI Facilities and thereby significantly improve  
8 air quality;

9 WHEREAS, all parties recognize that each Furnace is designed and  
10 Operated differently and may necessitate different limits for Sulfur Dioxide for  
11 each Furnace and each glass type;

12 WHEREAS, all parties recognize that glass Furnaces are Operated  
13 continuously for periods of five (5) to ten (10) years, and attempts to shut them  
14 down more frequently may result in significant problems including, but not limited  
15 to, damage to the refractory and safety concerns;

16 WHEREAS, SGCI has waived any applicable federal or state requirements  
17 of statutory notice of the alleged violations;

18 WHEREAS, the United States, Commonwealth of Massachusetts;  
19 Commonwealth of Pennsylvania, Department of Environmental Protection; State  
20 of North Carolina; State of Illinois; State of Indiana and its Department of

1 Environmental Management; State of Wisconsin; Oklahoma Department of  
2 Environmental Quality; the State of Louisiana, on behalf of the Louisiana  
3 Department of Environmental Quality; State of Missouri, Department of Natural  
4 Resources; Washington State Department of Ecology; Puget Sound Clean Air  
5 Agency, and San Joaquin Valley Unified Air Pollution Control District, and SGCI,  
6 have agreed, and the Court by entering this Consent Decree finds, that this Consent  
7 Decree has been negotiated in good faith and at arm's length; that this settlement is  
8 fair, reasonable, and in the public interest, and consistent with the goals of the Act;  
9 and that entry of this Consent Decree without further litigation is the most  
10 appropriate means of resolving this matter;

11 NOW, THEREFORE, without any admission by SGCI, and without  
12 adjudication of the violations alleged in the Complaints or the NOV, it is hereby  
13 ORDERED, ADJUDGED, AND DECREED as follows:

14 I. JURISDICTION AND VENUE

15 1. This Court has jurisdiction over the subject matter of this action, pursuant to  
16 28 U.S.C. §§ 1331, 1345, and 1355, and Section 113(b) of the Act, 42 U.S.C. §  
17 7413(b), and over the Parties. Venue lies in this District pursuant to Section  
18 113(b) of the Act, 42 U.S.C. § 7413(b), and 28 U.S.C. §§ 1391(b) and (c) and  
19 1395(a), because some of the violations alleged in the Complaints are alleged to  
20 have occurred in, and SGCI conducts business in, this judicial district. SGCI



1 consents to this Court's jurisdiction over this Consent Decree and any action to  
2 enforce this Consent Decree, and to venue in this judicial district. For purposes of  
3 this Consent Decree and any action to enforce this Consent Decree, SGCI consents  
4 to this Court's jurisdiction over SGCI. Solely for the purposes of this Consent  
5 Decree and the underlying Complaints, and for no other purpose, SGCI waives all  
6 objections and defenses that it may have to the Court's jurisdiction over this action,  
7 to the Court's jurisdiction over SGCI, and to venue in this District. SGCI shall not  
8 challenge the terms of this Consent Decree or this Court's jurisdiction to enter and  
9 enforce this Consent Decree. Except as expressly provided for herein, this Consent  
10 Decree shall not create any rights in or obligations of any party other than the  
11 Plaintiff, Plaintiff-Intervenors, and SGCI. Except as provided in Section XXIV  
12 (Public Comment) of this Consent Decree, the Parties consent to entry of this  
13 Consent Decree without further notice.

14 2. For purposes of this Consent Decree, SGCI agrees that the Complaints and  
15 the States' Complaints in Intervention state claims upon which relief may be  
16 granted pursuant to Sections 111 and 165 of the Act, 42 U.S.C. §§ 7411, 7475  
17 and/or pursuant to state law.

18 3. Notice of the commencement of this action has been given to Massachusetts  
19 Department of Environmental Protection, New Jersey Department of  
20 Environmental Protection, Pennsylvania Department of Environmental Protection,

1 North Carolina Department of Environment and Natural Resources, Illinois  
2 Environmental Protection Agency, State of Indiana and its Department of  
3 Environmental Management, Wisconsin Department of Natural Resources, Texas  
4 Commission on Environmental Quality, Oklahoma Department of Environmental  
5 Quality, Louisiana Department of Environmental Quality, Missouri Department of  
6 Natural Resources, California Air Resources Board, Washington State Department  
7 of Ecology, Puget Sound Clean Air Agency, San Joaquin Valley Unified Air  
8 Pollution Control District, and South Coast Air Quality Management District as  
9 required by Section 113(b) of the Act, 42 U.S.C. § 7413(b).

## 10 II. APPLICABILITY

11 4. The obligations of this Consent Decree apply to and are binding upon the  
12 Plaintiff, Plaintiff-Intervenors and upon SGCI and its officers, employees, agents,  
13 subsidiaries, successors, assigns, or other entities or persons otherwise bound by  
14 law.

15 5. SGCI shall be responsible for providing a copy of this Consent Decree to all  
16 vendors, suppliers, consultants, contractors, agents, and any other company or  
17 organization retained to perform any of the work required by this Consent Decree.  
18 Notwithstanding any retention of contractors, subcontractors, or agents to perform  
19 any work required under this Consent Decree, SGCI shall be responsible for  
20 ensuring that all work is performed in accordance with the requirements of this

1 Consent Decree. For this reason, in any action to enforce this Consent Decree,  
2 SGCI shall not assert as a defense the failure of its officers, directors, employees,  
3 servants, agents, or contractors to take actions necessary to comply with this  
4 Consent Decree, unless SGCI establishes that such failure resulted from a Force  
5 Majeure event, as defined in Paragraph 62 of this Consent Decree.

### 6 III. DEFINITIONS

7 6. Terms used in this Consent Decree that are defined in the Act or in federal  
8 regulations promulgated pursuant to the Act shall have the meanings assigned to  
9 them in the Act or such regulations, unless otherwise provided in this Decree.

10 Whenever the terms set forth below are used in this Consent Decree, the following  
11 definitions shall apply:

12 a. "24-hour Block Average" shall be calculated by averaging the twenty-  
13 four (24) one-hour relevant data outputs (concentration or pounds) for a  
14 given Day and using the daily glass production rates (tons) on that Operating  
15 Day where applicable.

16 b. "Affected State(s)" shall mean any local agency Plaintiff-Intervenor  
17 or State Plaintiff-Intervenor and its agencies and political subdivisions  
18 having jurisdiction over a Facility addressed in this Consent Decree.

19 c. "Abnormally Low Production Rate" shall mean a glass production  
20 rate at or below the production rate set forth in Paragraph 10.



1 d. "Abnormally Low Production Rate Day" shall mean any Operating  
2 Day where production falls into the range of Abnormally Low Production  
3 Rate, for at least one continuous hour.

4 e. "Calendar Year" shall mean the period commencing on January 1 and  
5 ending on December 31 of the same year.

6 f. "CEMS" means Continuous Emission Monitoring System.

7 g. "CEMS Certification" means the certification of the CEMS required  
8 by 40 C.F.R. § 60.13, 40 C.F.R. Part 60 Appendix B (Performance  
9 Specification 2) and 40 C.F.R. Part 60 Appendix F (Quality Assurance  
10 Procedures).

11 h. "CEMS Certification Event" shall mean an event that triggers the  
12 requirement to complete a first or subsequent CEMS Certification. The first  
13 CEMS Certification shall not be required until the dates set forth in Table 8.  
14 Events that will trigger subsequent CEMS Certification include a Furnace  
15 Startup or a First Control Device Startup. SGCI shall commence such  
16 recertification no later than thirty (30) days after the Furnace Startup period  
17 concludes (but no later than seventy (70) Days after Furnace Startup  
18 commences) or First Control Device Startup period concludes. If a Furnace  
19 Startup and a First Control Device Startup happen at the same time, then the

1 recertification shall not be conducted until the first Operating Day after the  
2 conclusion of the later startup event.

3 i. "Cloud Chamber Scrubber System" and "CCSS" shall mean a  
4 pollution control device that works by passing the Furnace exhaust gas  
5 stream through a chamber that contains a "scrubbing cloud" of high-density,  
6 charged water droplets. The droplets collect particles and sulfur oxides as  
7 they interact with the process gas stream. The droplets are then collected at  
8 the bottom of the system.

9 j. "Color Transition" shall mean the period of not more than seven Days  
10 from the time when a glass color of an oxidation state different from that  
11 previously melted in the Furnace, is introduced to the Furnace, to the time  
12 when saleable glass bottles are being produced in the new color.

13 k. "Complaints" shall mean the Complaints filed by the United States,  
14 and the Complaints filed by the Plaintiff-Intervenors in this action.

15 l. "COMS" shall mean a Continuous Opacity Monitoring System.

16 m. "Consent Decree" or "Decree" shall mean this Consent Decree and all  
17 appendices attached hereto, but in the event of any conflict between the text  
18 of this Consent Decree and any Appendix, the text of this Consent Decree  
19 shall control.



1 n. "Continuous Operating Year" shall mean a Calendar Year during  
2 which, on every day of the year, at least one of the Furnaces connected to a  
3 control system is Operating.

4 o. "Control Device Startup" shall mean the period of time from  
5 commencement of operation of an SCR, Scrubber System, ESP, CCSS, or  
6 similar add-on control device until the operation of the device has been  
7 stabilized and the device has achieved normal operating conditions. Such  
8 period shall not exceed thirty (30) Days.

9 p. "Date of Entry" means the date this Consent Decree is approved or  
10 signed by the United States District Court Judge.

11 q. "Date of Lodging" means the date this Consent Decree is filed for  
12 lodging with the Clerk of the Court for the United States District Court for  
13 the Western District of Washington.

14 r. "Day" shall mean a calendar day unless expressly stated to be a  
15 working day or unless a State rule requires that CEMs data be reported on  
16 Standard time (with no change for Daylight Savings Time). In computing  
17 any period of time for determining reporting deadlines under this Consent  
18 Decree, where the last day would fall on a Saturday, Sunday, or federal or  
19 State holiday, in the State where the Facility is located, the period shall run  
20 until the close of business of the next working day.

s. "EPA" or "the Agency" shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.

t. "Emission Rate 30-day Rolling Average" shall be expressed as pounds of pollutant per ton of glass produced calculated at the Furnace in question in accordance with the following formula and Subparagraphs i. and ii below:

$$30 - day\ average\ \frac{lb\ E}{ton} = \frac{COD_E (lbs) + P29D_E (lbs)}{COD_{Prod} (tons) + P29D_{Prod} (tons)}$$

Where: 30-day average (lb E/ton) = The Emission Rate 30-day Rolling Average

E = Emissions of the pollutant in question (NO<sub>x</sub> or SO<sub>2</sub>)

COD = Current Operating Day where the relevant Emission Rate 30-day Rolling Average is the applicable limit.

COD<sub>E</sub> = The daily Emissions as measured by a CEMS on the COD, in pounds.

COD<sub>Prod</sub> = Daily glass production on the COD, in tons of glass.

P29D = The Previous 29 Operating Days where the relevant Emission Rate 30-day Rolling Average is the applicable limit.

P29D<sub>E</sub> = The sum of the daily NO<sub>x</sub> or SO<sub>2</sub> Emissions as measured by a CEMS during the P29D, in pounds.

P29D<sub>Prod</sub> = The sum of the daily glass production during the P29D, in tons of glass.

i. A new Emission Rate 30-day Rolling Average shall be calculated for each new Operating Day where the Emission Rate 30-day Rolling Average is the applicable standard.

Any Operating Day where the newly calculated Emission Rate 30-day Rolling Average exceeds the limit is a separate one Day violation; and

ii. As specified in this Consent Decree, some Operating Days will be excluded from the Emission Rate 30-day Rolling Average as set forth in Paragraphs 7-9 of this Consent Decree.

u. "Emissions Credit(s)" means an authorization or credit to emit a specified amount of the pollutants NO<sub>x</sub>, SO<sub>2</sub>, PM, PM<sub>10</sub> and PM<sub>2.5</sub> that is allocated or issued under an emissions trading or marketable permit program of any kind established under the Act or a State Implementation Plan.

v. "Facility" or "Facilities" shall mean SGCI's plants further described below at Burlington, Wisconsin; Carteret, New Jersey; Dolton, Illinois; Dunkirk, Indiana; Henderson, North Carolina; Lincoln, Illinois; Madera, California; Milford, Massachusetts; Pevely, Missouri; Port Allegany, Pennsylvania; Ruston, Louisiana; Sapulpa, Oklahoma; Seattle, Washington;



1 Waxahachie, Texas; and Wilson, North Carolina. Each of these plants may  
2 be referred to as a "Facility."

3 i. "Burlington" shall mean SGCI's Facility located at 815 S.  
4 McHenry St, Burlington, Wisconsin;

5 ii. "Carteret" shall mean SGCI's former Facility located at 50  
6 Bryla St, Carteret, New Jersey;

7 iii. "Dolton" shall mean SGCI's Facility located at 13850  
8 Cottage Grove Avenue, Dolton, Illinois;

9 iv. "Dunkirk" shall mean SGCI's Facility located at 524 E.  
10 Center Street, Dunkirk, Indiana;

11 v. "Henderson" shall mean SGCI's Facility located at 620  
12 Facet Road, Henderson, North Carolina;

13 vi. "Lincoln" shall mean SGCI's Facility located at 1200 North  
14 Logan St., Lincoln, Illinois;

15 vii. "Madera" shall mean SGCI's Facility located at 24441  
16 Avenue 12 & Road 24 1/2, Madera, California;

17 viii. "Milford" shall mean SGCI's Facility located at 1 National  
18 St., Milford, Massachusetts;

19 ix. "Pevely" shall mean SGCI's Facility located at 1500 Saint-  
20 Gobain Drive Hwy 61, Pevely, Missouri;

- 1                   x. "Port Allegany" shall mean SGCI's Facility located at 1  
2                   Glass Place, Port Allegany, Pennsylvania;
- 3                   xi. "Ruston" shall mean SGCI's Facility located at 4241 Hwy  
4                   563, Ruston, Louisiana;
- 5                   xii. "Sapulpa" shall mean SGCI's Facility located at 1000 N.  
6                   Mission, Sapulpa, Oklahoma;
- 7                   xiii. "Seattle" shall mean SGCI's Facility located at 5801 E.  
8                   Marginal Way S., Seattle, Washington;
- 9                   xiv. "Waxahachie" shall mean SGCI's Facility located at 2400  
10                  I.H. 35 E., Waxahachie, Texas; and
- 11                  xv. "Wilson" shall mean SGCI's Facility located at 2200  
12                  Firestone Boulevard, Wilson, North Carolina.
- 13           w.     "First Control Device Startup" shall only refer to the first startup of  
14           the relevant add-on control device (an SCR, Scrubber System, ESP, CCSS,  
15           or similar add-on control). First Control Device Startup shall represent the  
16           period of time from commencement of operation of the device until the  
17           operation of the device has been stabilized and the device has achieved  
18           normal operating conditions, but shall not exceed thirty (30) Days.
- 19           x.     "Furnace" means for the purposes of NSPS only, a refractory vessel in  
20           which raw materials are charged, melted at high temperature, refined, and



1 conditioned to produce molten glass which includes foundations,  
2 superstructure and retaining walls, raw material charger systems, heat  
3 exchangers, melter cooling system, exhaust system, refractory brick work,  
4 fuel supply and electrical boosting equipment, integral control systems and  
5 instrumentation, and appendages for conditioning and distributing molten  
6 glass to forming apparatuses. For all other purposes, "Furnace" means a unit  
7 comprised of a refractory-lined vessel in which raw materials are charged  
8 and melted at high temperature to produce molten glass.

9 y. "Furnace Startup" means the period of time while a Furnace's  
10 refractory is being heated up from ambient temperature and includes the  
11 Initial Heating Phase, Refractory Soak and Seal Phase, and Furnace  
12 Stabilization Phase.

13 i. "Initial Heating Phase" means the slow heating of the  
14 Furnace refractory using portable natural-gas burners  
15 placed in the openings in the Furnace. This phase typically  
16 lasts no longer than four (4) Days and ends when the main  
17 Furnace burners commence operation.

18 ii. "Refractory Soak and Seal Phase" means the phase of the  
19 Furnace Startup following the Initial Heating Phase when  
20 the Furnace is filled with molten glass, the temperature of

1 the Furnace reaches operating conditions, and the refractory  
2 components reach thermal equilibrium. This phase  
3 typically lasts no longer than twenty-one (21) Days and  
4 ends when the joints between the refractory components are  
5 sealed and the Furnace is closed to the atmosphere.

6 iii. "Furnace Stabilization Phase" means the phase of Furnace  
7 Startup following the Refractory Soak and Seal Phase when  
8 the Furnace Operation is being stabilized. This phase will  
9 end no later than seventy (70) Days after the beginning of  
10 the Initial Heating Phase. However, notwithstanding the  
11 previous sentence, EPA or an Affected State may seek  
12 stipulated penalties if SGCI has unduly delayed completion  
13 of the Furnace Stabilization Phase. SGCI must track the  
14 status of the Startup as required in Exhibit A. Exhibit A  
15 includes conditions that may be used to indicate whether  
16 the Furnace Stabilization Phase should have been  
17 completed earlier than 70 days after the beginning of the  
18 Initial Heating Phase.

19 z. "Hot Spot Temperature" shall mean the highest temperature of the  
20 Furnace breastwall refractory. Breastwall refractory is the refractory

1 sidewall between the tuck stone (about 18" above glass line) and the crown  
2 skew (where the Furnace crown meets the Furnace sidewall).

3 aa. "Inlet" shall be the emission concentration (in parts per million by  
4 volume dry) measured prior to the control device.

5 bb. "Installation of Controls" shall, solely for the purpose of Paragraph 29  
6 of this Consent Decree, include:

7 i. The installation of an OEAS, SCR, Semi-dry Scrubber  
8 System, Dry Scrubber System, ESP, or CCSS;

9 ii. The installation of any alternative controls approved under  
10 Paragraph 103;

11 iii. The conversion of a Furnace to Oxyfuel; and

12 iv. The receipt of a limit for a Furnace listed in Table 4 in  
13 compliance with Paragraph 8.g., 9.f., 9.g., and 9.h.

14 cc. "Maintenance" shall mean activities necessary to keep the system or  
15 equipment working in its normal operating condition as set forth in  
16 Paragraph 13.

17 dd. "Major Rebuild" shall refer to the process of stopping glass  
18 production, stopping the flow of fuel, fully cooling down a Furnace,  
19 replacing some or all of the refractory in the Furnace, the crown and/or the  
20 regenerators (if applicable), and beginning a new campaign by starting up

1 the Furnace again by firing fuel again and starting the production of glass. A  
2 Major Rebuild, for the purposes of this Consent Decree, does not include  
3 any refractory repairs conducted when the Furnace is still hot, emergency  
4 cold repairs, repairs solely required for restart of a Furnace which has  
5 temporarily ceased Operation due to economic reasons, or the planned minor  
6 cold repairs currently scheduled on the following Furnaces:

- 7 i. Waxahachie;
- 8 ii. Dolton Furnace #2;
- 9 iii. Henderson Furnace #1;
- 10 iv. Lincoln;
- 11 v. Madera Furnace #1; and
- 12 vi. Sapulpa Furnaces #50, #51, and #52.

13 ee. "Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any  
14 sudden, infrequent, and not reasonably preventable failure of air pollution  
15 control equipment, process equipment, or a process to operate in a normal or  
16 usual manner, but shall not include failures that are caused in part by poor  
17 Maintenance or careless operation.

18 ff. "Month" shall mean calendar month.

19 gg. "NO<sub>x</sub>" shall mean the sum of oxides of nitrogen in the flue gas,  
20 collectively expressed as NO<sub>2</sub>.



1 hh. "NSPS" shall mean the standards of performance for new stationary  
2 sources codified at 40 C.F.R. Part 60. General NSPS requirements are  
3 codified at 40 C.F.R. Part 60, Subpart A. NSPS requirements specifically  
4 for glass manufacturing plants are codified at 40 C.F.R. Part 60, Subpart CC.

5 ii. "New Source Review" or "NSR" shall mean Prevention of Significant  
6 Deterioration (PSD) and Nonattainment New Source Review (NNSR)  
7 provisions in Part C and D of Subchapter I of the Act, 42 U.S.C. §§ 7470-  
8 7492, 7501-7515, and federally-enforceable state implementation plans.

9 jj. "Operate," "Operation," "Operating" and "Operated" shall mean  
10 when fuel is fired in the Furnace.

11 kk. "Operating Day" shall mean any Day where any fuel is fired into the  
12 Furnace. The Day starts at 12:00 am and ends at 11:59 pm.

13 ll. "Outlet" shall mean the emission concentration (in parts per million  
14 by volume dry) measured after a control device.

15 mm. "Outlet 30-day Rolling Average" is a term which applies only to SO<sub>2</sub>  
16 and shall be calculated by determining the Outlet 24-hour Block Average  
17 concentration from each Furnace (or combined stack, if applicable) during  
18 an Operating Day and previous twenty-nine (29) Operating Days when  
19 Outlet 30-day Rolling Average was the applicable standard. A new Outlet  
20 30-day Rolling Average shall be calculated for each Operating Day. Any

1 Operating Day where the newly calculated Outlet 30-day Rolling Average  
2 exceeds the limit is a separate one Day violation. As specified in this  
3 Consent Decree, the following Operating Days are exempt from this  
4 average: Control Device Startup, Malfunction of the control device  
5 (Scrubber System, CCSS, or ESP) and Maintenance on the control device  
6 (Scrubber System, CCSS, or ESP).

7 nn. "Oxyfuel Furnace" shall mean a Furnace in which the gas that  
8 provides the oxidant for combustion of the fuel is composed of greater than  
9 or equal to 90 percent oxygen.

10 oo. "Oxygen Enriched Air Staging" and "OEAS" shall mean the method  
11 of combustion air staging to control NO<sub>x</sub> formation by reducing the amount  
12 of combustion air delivered to the firing ports, thereby decreasing the  
13 oxygen available in the flame's high temperature zone in the first  
14 combustion stage, and injecting oxygen-enriched air into the Furnace near  
15 the exit port(s) to complete combustion in the second stage within the  
16 Furnace.

17 pp. "Paragraph" shall mean a portion of this Consent Decree identified by  
18 an Arabic numeral.



1 qq. "Particulate Matter" and "PM" shall mean any finely divided solid or  
2 liquid material, other than uncombined water, as measured by the reference  
3 methods specified below:

4 i. Filterable Particulate is the particulate measured using EPA  
5 Method 5 (40 C.F.R. Part 60 Appendix A).

6 ii. Total particulate is the combination of filterable plus  
7 condensable PM and is measured using Method 5 (40  
8 C.F.R. Part 60 Appendix A) and EPA Method 202: (40  
9 C.F.R. Part 51 Appendix M).

10 rr. "Parties" shall mean the United States, Commonwealth of  
11 Massachusetts, Commonwealth of Pennsylvania, State of North Carolina,  
12 State of Illinois, State of Indiana, State of Wisconsin, State of Washington,  
13 Oklahoma Department of Environmental Quality, State of Louisiana, State  
14 of Missouri, San Joaquin Valley Air Pollution Control District, Puget Sound  
15 Clean Air Agency and SGCI.

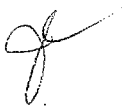
16 ss. "Permit" shall include any and all final authorizations necessary (1) to  
17 construct, modify, or Operate a Furnace; (2) to construct, install, and operate  
18 a control device or monitoring device issued pursuant to federal, state, or  
19 local law; or (3) to construct, install, and operate a control device or  
20 monitoring device required by this Consent Decree.

1 tt. "Prevention of Significant Deterioration," and "PSD" shall mean the  
2 attainment area New Source Review program within the meaning of Part C  
3 of Subchapter I of the Act, 42 U.S.C. §§ 7470-7492.

4 uu. "Regenerative Furnace" shall mean a Furnace in which ambient air  
5 provides the primary oxidant for combustion of the fuel and the air is  
6 preheated using a system of regenerators to recover heat from the exhaust  
7 gas.

8 vv. "Removal Efficiency" for SO<sub>2</sub> means the percent reduction in  
9 concentration of that pollutant achieved by a Furnace's pollution control  
10 device. This percent reduction shall be calculated by subtracting the Outlet  
11 from the Inlet, dividing by the Inlet and then multiplying by 100.

12 ww. "Removal Efficiency 30-day Rolling Average" is a term which  
13 applies to SO<sub>2</sub> emissions and shall be calculated by summing the Removal  
14 Efficiency 24-hour Block Averages from each Furnace (or combined stack,  
15 if applicable) for each Operating Day and previous twenty-nine (29)  
16 Operating Days when Removal Efficiency 30-day Rolling Average was the  
17 applicable standard and then dividing by 30. A new Removal Efficiency 30-  
18 day Rolling Average shall be calculated for each new Operating Day. Any  
19 Operating Day where the newly calculated Removal Efficiency 30-day  
20 Rolling Average is less than the Removal Efficiency limit is a separate one-



1 day violation. As specified in this Consent Decree, the following Operating  
2 Days are exempt from this average: Control Device Startup of the Scrubber  
3 System, CCSS, or ESP; Malfunction of the Scrubber System, CCSS, or ESP;  
4 and Maintenance on the Scrubber System, CCSS, or ESP.

5 xx. "Scrubber System" shall mean a type of system known sometimes as  
6 a sorbent injection system which involves the addition of an alkaline  
7 material into the gas stream to react with the acid gases. The acid gases  
8 react with the alkaline sorbents to form solid salts.

9 i. Semi-dry Scrubber System – The system described above  
10 with the sorbent in an aqueous phase which improves  
11 collection efficiency.

12 ii. Dry Scrubber System – The system described above with  
13 no moisture added in the reaction chamber or reaction area.

14 yy. "Section" shall mean a portion of this Consent Decree identified by a  
15 Roman numeral.

16 zz. "Selective Catalytic Reduction" and "SCR" means a pollution control  
17 device that reacts ammonia (NH<sub>3</sub>) with the NO<sub>x</sub> to form nitrogen (N<sub>2</sub>) and  
18 water (H<sub>2</sub>O) using a catalyst to speed the reaction.

19 aaa. "SGCI" shall mean Saint-Gobain Containers, Inc.

20 bbb. "SO<sub>2</sub>" shall mean the pollutant sulfur dioxide.



ccc. "State" or "States" shall mean those States or Commonwealths and local authorities that have jurisdiction over a Facility covered by this action.

ddd. "Supplemental Environmental Project" and "SEP" shall mean an environmentally beneficial project that SGCI agrees to undertake pursuant to this Consent Decree and SGCI is not otherwise legally required to perform.

eee. "System-wide Weighted Annual Average Actual Emissions" is a term applicable to SO<sub>2</sub> emissions, expressed in pounds of SO<sub>2</sub> per ton of glass produced (lbs/ton) and shall mean the total pounds of emissions of SO<sub>2</sub> as measured by the continuous emissions monitoring systems (CEMS) emitted in a Calendar Year from all Furnaces included in the average divided by the total actual annual tons of glass production for all Furnaces included in the average for that Calendar Year.

fff. "System-wide Weighted Average of Permit Limits" is a term applicable to SO<sub>2</sub> emissions and shall be calculated by:

- i. For each Furnace listed in Table 4, multiplying the applicable permitted emission rate of SO<sub>2</sub> (in pounds per ton of glass produced) by the maximum annual glass production rate for each Furnace during Calendar Years 2009 through 2013. The permitted emission rate is the federally-enforceable limit SGCI has requested and

4

1 obtained from the State for flint or colored glass as the case  
2 may be, in order to meet the requirements for the Furnaces  
3 listed in Table 4 identified in Paragraph 8.g.iii,

4 ii. Summing the result of the equation in Subparagraph i.

5 above for each Furnace listed in Table 4, and

6 iii. Dividing the total of Subparagraph ii. above by the sum of

7 all the maximum annual glass production rates for all

8 Furnaces Listed in Table 4 from Subparagraph i. above.

9 ggg. "Title V Permit" shall mean a permit required by or issued pursuant to  
10 the requirements of 42 U.S.C. § 7661 - 7661f.

11 hhh. "Ton" or "tons" shall mean short ton or short tons (equal to 2000  
12 pounds).

13 iii. "TSP" shall mean total suspended particulate.

14 jjj. "United States" shall mean the United States of America, acting on  
15 behalf of EPA.

16 IV. INJUNCTIVE RELIEF

17 7. **NO<sub>x</sub> Emission Controls, Limits, and Compliance Schedule**

18 a. Interim NO<sub>x</sub> Emission Limits:

19 i. For those Furnaces listed in Table 1, the NO<sub>x</sub> emission

20 limits in Table 1, expressed in tons of NO<sub>x</sub> per Calendar

Year, shall apply and shall remain in place until installation of controls pursuant to Table 2 and issuance of a new Permit including the emission limits outlined in Paragraphs 7.c. through 7.e.

- ii. For the Calendar Year 2009, and for each Calendar Year thereafter until Paragraph 7.b. applies, SGCI shall comply with the following annual interim NO<sub>x</sub> emission limits:

Table 1 – Interim NO<sub>x</sub> Emission Limits

| Facility and Furnace # | Interim NO <sub>x</sub> Emission Limit (tons per year) | Interim NO <sub>x</sub> Emission Factor (lb/ton) |
|------------------------|--|--|
| Dolton #2              | 316.8 tpy  | 6.2  |
| Dolton #3              | 305.5 tpy  | 6.2  |
| Henderson #2           | 457.7 tpy  | 7.6  |
| Sapulpa #50            | 407.3 tpy  | 6.2  |
| Seattle #3             | 176.8 tpy  | 3.8  |
| Seattle #4             | 529 tpy  | 14.4   |
| Dunkirk #1             | 146 tpy  | 1.6  |
| Dunkirk #2             | 160.6 tpy  | 1.6  |
| Lincoln                | 468.4 tpy  | n/a  |

- iii. Except for the Dolton Facility, prior to NO<sub>x</sub> CEMS installation and certification, compliance with the interim NO<sub>x</sub> emission limits in Table 1 shall be demonstrated by conducting an EPA Method 7E (40 C.F.R. Part 60



Appendix A) source test. Testing shall be conducted initially no later than twelve (12) months after the Date of Entry and once each Calendar Year thereafter until NO<sub>x</sub> CEMS are installed and certified. A source test is not required the year that a NO<sub>x</sub> CEMS is installed. Compliance with the annual ton per year interim limit in Table 1 shall be calculated by using the following equation:

$$NO_x = \left[ \frac{PastTest \times 1stProd}{2000} \right] + \left[ \frac{NewTest \times 2ndProd}{2000} \right]$$

Where: NO<sub>x</sub> = NO<sub>x</sub> Emissions (tpy)

PastTest = Last source test result (lb/ton). If no source test has been conducted pursuant to this Consent Decree, the Interim Emission Factor listed in Table 1 shall be used (lb/ton).

NewTest = New test from the year for which emissions are being calculated (lb/ton).

1stprod = Production from January 1<sup>st</sup> through the Day prior to the Day the new source test is commenced (tons of glass).

2ndprod = Production from the Day of the new source test through the end of that same Calendar Year (tons of glass).

Note: If SGCI elects to do more than one test in a year, emissions calculated on the Days following the second test, will be based on that second test.

1                   iv. For the Dolton Facility, emissions shall be calculated in the  
2                   same way as above in Paragraph 7.a.iii, but testing shall be  
3                   conducted initially no later than December 31, 2009, and  
4                   then once again after December 31, 2010, but no later than  
5                   December 31, 2011, for Furnaces #2 and #3. For the period  
6                   of time in the Calendar Year 2009 before SGCI conducts  
7                   the first source test under this Consent Decree, emissions  
8                   shall be calculated based on the Interim Emission Factor  
9                   listed in Table 1.

10                  v. Upon NO<sub>x</sub> CEMS installation and certification as required  
11                  by this Consent Decree, compliance with the interim NO<sub>x</sub>  
12                  emission limit in Table 1 shall be demonstrated using  
13                  emissions data generated by the NO<sub>x</sub> CEMS in order to  
14                  calculate all subsequent daily emission rates that are used to  
15                  calculate the annual emission rate for the Calendar Year.  
16                  For the first Calendar Year during which CEMS are  
17                  installed and certified, the annual emissions calculated will  
18                  be the sum of the tons of NO<sub>x</sub> emitted on the Days when  
19                  the emissions were determined from source test data (as  
20                  calculated above in Paragraph 7.a.iii.) and the tons of NO<sub>x</sub>



emitted on the Days when emissions were determined by

CEMS data.

b. NO<sub>x</sub> Emission Controls and Compliance Schedule

- i. For each Furnace in Table 2, SGCI shall operate the NO<sub>x</sub>  
emission control device specified for that Furnace in Table

2.

Table 2 – NO<sub>x</sub> Emission Controls and Compliance Schedule

| <u>Facility and<br/>Furnace Number</u> | <u>Controls</u> | <u>Deadline</u>   |
|--|-----------------|-------------------|
| Pevely #21                             | Oxyfuel Furnace | December 31, 2009 |
| Ruston #2                              | OEAS            | December 31, 2009 |
| Wilson #29                             | Oxyfuel Furnace | December 31, 2009 |
| Port Allegany #1                       | OEAS            | December 31, 2010 |
| Ruston #1                              | OEAS            | December 31, 2010 |
| Milford #15                            | Oxyfuel Furnace | December 31, 2010 |
| Milford #16                            | Oxyfuel Furnace | December 31, 2015 |
| Wilson #28                             | Oxyfuel Furnace | December 31, 2011 |
| Dunkirk #2                             | Oxyfuel Furnace | December 31, 2012 |
| Seattle #4                             | OEAS            | December 31, 2012 |
| Waxahachie                             | Oxyfuel Furnace | December 31, 2013 |
| Henderson #2                           | OEAS            | December 31, 2013 |
| Madera #1                              | Oxyfuel Furnace | December 31, 2014 |
| Pevely #20                             | Oxyfuel Furnace | December 31, 2013 |
| Dunkirk # 1                            | Oxyfuel Furnace | December 31, 2013 |
| Port Allegany #3                       | OEAS            | December 31, 2013 |
| Dolton #1                              | SCR             | December 31, 2014 |
| Dolton #2                              | SCR             | December 31, 2014 |
| Dolton #3                              | SCR             | December 31, 2014 |
| Burlington #6                          | Oxyfuel Furnace | December 31, 2015 |
| Burlington #7                          | Oxyfuel Furnace | December 31, 2015 |
| Seattle #5                             | Oxyfuel Furnace | December 31, 2015 |
| Seattle #3                             | Oxyfuel Furnace | December 31, 2016 |
| Henderson #1                           | Oxyfuel Furnace | December 31, 2016 |



|             |                 |                   |
|-------------|-----------------|-------------------|
| Seattle #2  | Oxyfuel Furnace | December 31, 2017 |
| Sapulpa #51 | OEAS            | December 31, 2018 |
| Sapulpa #52 | OEAS            | December 31, 2018 |
| Lincoln     | Oxyfuel Furnace | December 31, 2018 |
| Sapulpa #50 | OEAS            | December 31, 2018 |

- 1 c. For Furnaces with Oxyfuel Technology:
- 2 i. After the next Major Rebuild, but no later than the dates
- 3 specified in Table 2, SGCI shall only Operate the Furnace
- 4 using Oxyfuel technology.
- 5 ii. SGCI shall install, maintain and Operate the Oxyfuel
- 6 Furnace such that the gas that provides the oxidant for
- 7 combustion of the fuel is at least 90 percent oxygen.
- 8 iii. SGCI shall comply with the following applicable limits for
- 9 Oxyfuel Furnaces:
- 10 1. Emission Rate 30-day Rolling Average Limit –
- 11 Commencing on the first Operating Day after
- 12 completion of the Furnace Startup period and
- 13 CEMS Certification (where the CEMS has been
- 14 installed), but no later than the date specified in
- 15 Table 2, an Oxyfuel Furnace shall not exceed the
- 16 Emission Rate 30-day Rolling Average of 1.3
- 17 pounds of NO<sub>x</sub> per ton of glass produced, as

measured using a NO<sub>x</sub> CEMS (where available),  
except during the following periods (as set forth in  
this Subparagraph): Abnormally Low Production  
Rate Days; Furnace Startup; Malfunction of the  
Furnace; and Maintenance of the Furnace.

2. NO<sub>x</sub> Limit during Abnormally Low Production

Rate Days –For any Abnormally Low Production  
Rate Day SGCI may elect to exclude the emissions  
generated during that Day from the Emission Rate  
30-day Rolling Average. During these Days, a  
CEMS shall be used to demonstrate compliance on  
a 24-hour Block Average with the following pound  
per day limit:

$$NO_{x\ Oxy\ Abn} = 1.3 \frac{lb\ NO_x}{ton} \times \left[ \frac{P}{0.35} \right]$$

Where: NO<sub>x</sub> Oxy Abn = NO<sub>x</sub> emission limit for an  
Oxyfuel Furnace during an Abnormally Low  
Production Rate Day, in pounds per day.  
P = Furnace-specific production threshold as  
defined in Paragraph 10, in tons of glass  
produced per day.

3. Limits during Furnace Startup –



1 a. Initial Heating Phase Operational Limit:

2 SGCI shall burn no more than 5.0 million  
3 standard cubic feet of natural gas in that  
4 Furnace during the Initial Heating Phase of  
5 the Furnace Startup.

6 b. Refractory Soak and Seal Phase Operational

7 Limits: SGCI shall comply with the  
8 following operational limits to limit NO<sub>x</sub>  
9 emissions during the Refractory Soak and  
10 Seal Phase of the Furnace Startup:

11 i. Burn no more than sixty million  
12 standard cubic feet natural gas in that  
13 Furnace;

14 ii. Limit excess oxygen below 5 percent  
15 at the Furnace exhaust flue, as  
16 determined by handheld monitor, once  
17 per shift;

18 iii. Limit Hot Spot Temperature to 2900  
19 degrees F; and



1                                   iv. Use thermal blankets or similar  
2                                   techniques to minimize air infiltration  
3                                   until expansion joints are sufficiently  
4                                   closed.

5                                   c. Furnace Stabilization Phase Operational

6                                   Limits: SGCI shall comply with the  
7                                   following operational limits to limit NO<sub>x</sub>  
8                                   emissions during the Furnace Stabilization  
9                                   Phase of the Furnace Startup:

10                                  i. Burn no more than ninety million  
11                                  standard cubic feet natural gas in that  
12                                  Furnace;

13                                  ii. Limit excess oxygen below 5 percent  
14                                  at the Furnace exhaust flue as  
15                                  determined by handheld monitor, once  
16                                  per shift; and

17                                  iii. Limit Hot Spot Temperature to 2900  
18                                  degrees F.

19                                  4. NO<sub>x</sub> limit during Malfunction of the Furnace – For  
20                                  any Operating Day where a Malfunction of the

Furnace occurs for any period of time, SGCI may elect to exclude the emissions generated during that Operating Day (Operating Days if the event covers more than one Operating Day) from the Emission Rate 30-day Rolling Average. During the Malfunction Days excluded from the Emission Rate 30-day Rolling Average, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$NO_{X\ Oxy\ Malf} = 4 \times NO_{X\ Oxy\ Abn}$$

Where:  $NO_{X\ Oxy\ Malf}$  =  $NO_X$  emission limit for an Oxyfuel Furnace during a Malfunction Day, in pounds per day.  
 $NO_{X\ Oxy\ Abn}$  = As defined in Paragraph 7.c.iii.2,  $NO_X$  emission limit for an Oxyfuel Furnace during an Abnormally Low Production Rate Day, in pounds per day.

5.  $NO_X$  limit during Maintenance of the Furnace – For any Operating Day where Maintenance activities on the Furnace are performed, SGCI may elect to exclude the Maintenance Day from the Emission Rate 30-day Rolling Average. For any Maintenance Day which is excluded from the 30-

day rolling average, a CEMS shall be used to

demonstrate compliance on a 24-hour Block

Average with the following pound per day limit:

$$NO_{X\ Oxy\ Maint} = \frac{MH \times [4 \times NO_{X\ Oxy\ Abn}]}{24} + \frac{NH \times [NO_{X\ Oxy\ Abn}]}{24}$$

Where:  $NO_{X\ Oxy\ Maint}$  =  $NO_X$  emission limit for an Oxyfuel Furnace during a Maintenance Day, in pounds per day.

$NO_{X\ Oxy\ Abn}$  = As defined in Paragraph 7.c.iii.2,  $NO_X$  emission limit for an Oxyfuel Furnace during an Abnormally Low Production Rate Day, in pounds per day.

MH = Hours of Maintenance

NH = Normal Hours = 24 - MH

d. For Furnaces with Selective Catalytic Reduction (SCR):

- i. For the Dolton Facility, no later than the first Operating Day after the date specified in Table 2, SGCI must commence operation of SCR to control emissions from all three Furnaces. For all other Furnaces, no later than the first Operating Day after the conclusion of the Control Device Startup period, SGCI shall Operate the Furnace(s) passing all stack gases (except during up to the first seven (7) days of the Furnace Startup; during Malfunction of the SCR or Scrubber System/ESP; or during Maintenance of the SCR or Scrubber System/ESP) through a Selective

1 Catalytic Reduction device in compliance with the  
2 following:

- 3 1. This SCR must be designed for a removal  
4 efficiency of at least 90 percent; and  
5 2. When the SCR is operating, SGCI shall  
6 continuously operate the SCR according to the  
7 vendor recommendations in order to minimize  
8 emissions to the extent practicable taking into  
9 consideration ammonia slip.

10 ii. SGCI shall comply with the following applicable NO<sub>x</sub>  
11 limits for all Furnaces to be equipped with SCR:

- 12 1. Emission Rate 30-day Rolling Average Limit –  
13 Commencing on the first Operating Day after  
14 completion of the Control Device Startup and  
15 CEMS Certification, but no later than the date  
16 specified in Table 2, SGCI shall not emit more than  
17 1.3 pounds of NO<sub>x</sub> per ton of glass produced on a  
18 30-day rolling average, as measured using a NO<sub>x</sub>  
19 CEMS (where available), except during the  
20 following periods (as set forth in this



Subparagraph): Abnormally Low Production Rate  
Days for any of the Furnaces; Control Device  
Startup; up to the first seven (7) days of the Furnace  
Startup; Malfunction of the SCR or Scrubber  
System/ESP; and Maintenance of the SCR or  
Scrubber System/ESP;

2. NO<sub>x</sub> Limit during Abnormally Low Production

Rate Days – When any of the Furnace(s) ducted  
through an SCR is Operating at an Abnormally  
Low Production Rate, SGCI may elect to exclude  
emissions from all Furnaces connected to the SCR  
from the Emission Rate 30-day Rolling Average.  
During these Days, a CEMS shall be used to  
demonstrate compliance on a 24-hour Block  
Average with the following pound per day limit:

$$NO_{X\ SCR\ Abn} = 1.3 \frac{lb\ NO_X}{ton} \times \left[ \frac{P}{0.35} \right]$$

Where: NO<sub>X SCR Abn</sub> = NO<sub>X</sub> emission limit for SCR  
during an Abnormally Low Production Rate  
Day on any of the Furnaces ducted through  
the SCR, in pounds per day  
P = Sum of the Furnace-specific production  
thresholds as defined in Paragraph 10, in

1 tons of glass produced per day for all of the  
2 Furnaces ducted through the SCR.

3 3. The first seven (7) days of the Furnace Startup –

4 For no more than the first seven (7) Days of the  
5 Furnace Startup, the Furnace exhaust may bypass  
6 the SCR to avoid having the operating inlet  
7 temperature of the SCR fall below its operational  
8 range. During these bypass Days SGCI shall burn  
9 no more than 15.0 million standard cubic feet of  
10 natural gas in that Furnace;

11 4. NO<sub>x</sub> limit during Startup of the SCR and

12 Malfunction of the SCR or Scrubber System/ESP –  
13 For any Operating Day during the Startup of SCR  
14 or where a Malfunction of the SCR or Scrubber  
15 System/ESP occurs for any period of time, SGCI  
16 may elect to exclude the emissions generated  
17 during that Operating Day (or Operating Days if the  
18 event covers more than one Operating Day) from  
19 the Emission Rate 30-day Rolling Average. During  
20 the Malfunction Days excluded from the Emission

Rate 30-day Rolling Average, a CEMS shall be  
used to demonstrate compliance on a 24-hour Block  
Average with the following pound per day limit:

$$NO_{X\ SCR\ Malf, SCR\ Startup} = 5 \times NO_{X\ SCR\ Abn}$$

Where:  $NO_{X\ SCR\ Malf, SCR\ Startup}$  =  $NO_X$  emission limit  
for a Furnace using SCR during a  
Malfunction Day and during SCR Startup, in  
pounds per day.  
 $NO_{X\ SCR\ Abn}$  = As defined in 7.d.ii.2,  $NO_X$   
emission limit for SCR during an  
Abnormally Low Production Rate Day, in  
pounds per day.

5.  $NO_X$  limit during Maintenance of the SCR or  
Scrubber System/ESP – For any Operating Day  
where Maintenance activities on the SCR or  
Scrubber System/ESP are performed, SGCI may  
elect to exclude the Maintenance Day from the  
Emission Rate 30-day Rolling Average. For any  
Day which is excluded from the 30-day rolling  
average, a CEMS shall be used to demonstrate  
compliance on a 24-hour Block Average with the  
following pound per day limit:

$$NO_{X\ SCR\ Maint} = \frac{MH \times [5 \times NO_{X\ SCR\ Abn}]}{24} + \frac{NH \times [NO_{X\ SCR\ Abn}]}{24}$$



Where:  $NO_{X\ SCR\ Maint}$  =  $NO_X$  emission limit for a  
Furnace using SCR during a Maintenance  
Day, in pounds per day  
 $NO_{X\ SCR\ Abn}$  = As defined in 7.d.ii.2,  $NO_X$   
emission limit for a Furnace using SCR  
during an Abnormally Low Production Rate  
Day, in pounds per day  
MH = Hours of Maintenance  
NH = Normal Hours = 24 – MH

e. For Furnaces with OEAS as identified in Table 2

- i. Except for the Sapulpa Furnaces, at the end of the Furnace  
Startup period following the next Major Rebuild, but no  
later than the first Operating Day after the dates specified in  
Table 2, SGCI shall only Operate the designated Furnace  
using OEAS technology.
- ii. For the Sapulpa Furnaces, no later than the first Operating  
Day after the date specified in Table 2, SGCI shall only  
Operate the Furnaces using OEAS technology.
- iii. SGCI shall comply with the following applicable  $NO_X$   
limits for OEAS-equipped Furnaces:

1. Emission Rate 30-day Rolling Average Limit –  
Commencing on the first Operating Day after  
completion of the Furnace Startup and CEMS  
Certification (where a CEMS is available), but no

1 later than the date specified in Table 2, SGCI shall  
2 not emit more than 3.8 pounds of NO<sub>x</sub> per ton of  
3 glass produced on a 30-day Rolling Average  
4 (except for the Seattle Furnace #4 and Henderson  
5 Furnace #2, which shall achieve an Emission Rate  
6 30-day Rolling Average equal to 0.6 multiplied by  
7 the result of the last stack test (in pounds per ton)  
8 prior to installing OEAS), as measured using a NO<sub>x</sub>  
9 CEMS (where available), except during the  
10 following periods (as set forth in this  
11 Subparagraph): Abnormally Low Production Rate  
12 Days; Furnace Startup; Malfunction of the Furnace;  
13 and Maintenance of the Furnace.

- 14 2. NO<sub>x</sub> Limit during Abnormally Low Production  
15 Rate Days – For any Abnormally Low Production  
16 Rate Day SGCI may elect to exclude the emissions  
17 generated during that Day from the Emission Rate  
18 30-day Rolling Average. During these Days, a  
19 CEMS shall be used to demonstrate compliance on

a 24-hour Block Average with the following pound

per day limit:

$$NO_{X\ OEAS\ Abn} = 3.8 \frac{lb\ NO_X}{ton} \times \left[ \frac{P}{0.35} \right]$$

Where:  $NO_{X\ OEAS\ Abn}$  =  $NO_X$  emission limit for an OEAS-Equipped Furnace during an Abnormally Low Production Rate Day, in pounds per day.  
P = Furnace-specific production threshold as defined in Paragraph 10, in tons of glass produced per day.

### 3. Limits during Furnace Startup –

#### a. Initial Heating Phase Operational Limit:

SGCI shall burn no more than 5.0 million standard cubic feet of natural gas in that Furnace during the Initial Heating Phase of the Furnace Startup.

#### b. Refractory Soak and Seal Phase Operational

Limits: SGCI shall comply with the following operational limits to limit  $NO_X$  emissions during the Refractory Soak and Seal Phase of the Furnace Startup:



1 i. Burn no more than sixty million  
2 standard cubic feet natural gas in that  
3 Furnace;

4 ii. Limit excess oxygen below 5 percent  
5 at the Furnace exhaust flue, as  
6 determined by handheld monitor, once  
7 per shift;

8 iii. Limit Hot Spot Temperature to 2900  
9 degrees F; and

10 iv. Use thermal blankets or similar  
11 techniques to minimize air infiltration  
12 until expansion joints are sufficiently  
13 closed.

14 c. Furnace Stabilization Phase Operational

15 Limits: SGCI shall comply with the  
16 following operational limits to limit NO<sub>x</sub>  
17 emissions during the Furnace Stabilization  
18 Phase of the Furnace Startup:

g-

i. Burn no more than ninety million  
standard cubic feet natural gas in that  
Furnace;

ii. Limit excess oxygen below 5 percent  
at the Furnace exhaust flue as  
determined by handheld monitor, once  
per shift; and

iii. Limit Hot Spot Temperature to 2900  
degrees F.

4. NO<sub>x</sub> limit during Malfunction – For any Operating  
Day where a Malfunction of the Furnace occurs for  
any period of time, SGCI may elect to exclude the  
emissions generated during those Operating Day  
(Operating Days if the event covers more than one  
Operating Day) from the Emission Rate 30-day  
Rolling Average. During the Malfunction Days  
excluded from the Emission Rate 30-day Rolling  
Average, a CEMS shall be used to demonstrate  
compliance on a 24-hour Block Average with the  
following pound per day limit:



$$NO_{X\ OEAS\ Malf} = 3 \times NO_{X\ OEAS\ Abn}$$

Where:  $NO_{X\ OEAS\ Malf}$  =  $NO_X$  emission limit for an OEAS-Equipped Furnace during a Malfunction Day, in pounds per day  
 $NO_{X\ OEAS\ Abn}$  = As defined under Paragraph 7.e.iii.2,  $NO_X$  emission limit for an OEAS-Equipped Furnace during an Abnormally Low Production Rate Day, in pounds per day.

5.  $NO_X$  limit during Maintenance – For any Operating Day where Maintenance activities on the Furnace are performed, SGCI may elect to exclude the Maintenance Day from the Emission Rate 30-day Rolling Average. For any Maintenance Day which is excluded from the 30-day Rolling Average, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$NO_{X\ OEAS\ Maint} = \frac{MH \times [3 \times NO_{X\ OEAS\ Abn}]}{24} + \frac{NH \times [NO_{X\ OEAS\ Abn}]}{24}$$

Where:  $NO_{X\ OEAS\ Maint}$  =  $NO_X$  emission limit for an OEAS-Equipped Furnace during a Maintenance Day, in pounds per day  
 $NO_{X\ OEAS\ Abn}$  = As defined in 7.e.iii.2.,  $NO_X$  emission limit for an OEAS-Equipped Furnace during an Abnormally Low Production Rate Day, in pounds per day

MH = Hours of Maintenance

NH = Normal Hours = 24 – MH

f. Monitoring: A CEMS, if available, shall be used to demonstrate compliance with the NO<sub>x</sub> limits in Paragraph 7.c. through 7.e.. If the Facility does not have a CEMS when it is required to meet the limit in Paragraphs 7.c. through 7.e. above, compliance shall be demonstrated using data generated from annual stack tests complying with 40 C.F.R. Part 60 Appendix A Method 7E. If a CEMS Certification Event occurs, then the requirement to demonstrate compliance continuously with the limit for that Furnace will be suspended until Certification is completed (provided the seven-day test required for Certification is commenced the first Operating Day following the conclusion of the CEMS Certification Event).

g. Existing State/Local Limits: The limits in Paragraph 7 do not replace any current State/local limits and do not relieve SGCI of its obligation to comply with those limits.

h. Recordkeeping: For any Operating Day that SGCI is excluding emissions from the relevant Emission Rate 30-day Rolling Average, it shall record the date, the exception (Abnormally Low Production Rate Day, Furnace Startup, Control Device Startup, Malfunction, or Maintenance) under which it is excluded, a calculation of the applicable limit (pounds per



1 day) according to the equations above, and the recorded emissions according  
2 to the CEMS (pounds per day). For any Operating Day excluded for  
3 Maintenance, SGCI shall record the total number of hours during which  
4 Maintenance occurred.

5 i. Recordkeeping and Reporting during Furnace Startup: In addition to  
6 the record keeping in Subparagraph h. above, during the applicable Furnace  
7 Startup period phases SGCI must also keep the following records:

8 i. For the Initial Heating Phase –

9 1. Total natural gas usage in that Furnace (in million  
10 standard cubic feet)

11 ii. For the Refractory Soak and Seal Phase –

12 1. Total natural gas usage in that Furnace (in million  
13 standard cubic feet);

14 2. Excess oxygen percentage at the Furnace exhaust  
15 flue (as determined by handheld monitor once per  
16 shift);

17 3. Hot Spot Temperature (measured once per shift);

18 and

1 4. A certified statement asserting whether thermal  
2 blankets or similar techniques were used during this  
3 period.

4 iii. For the Furnace Stabilization Phase –

- 5 1. Total natural gas usage in that Furnace (in million  
6 standard cubic feet);  
7 2. Excess oxygen percentage at the Furnace exhaust  
8 flue (as determined by handheld monitor once per  
9 shift); and  
10 3. Average Hot Spot Temperature (measured once per  
11 shift).

12 j. Where a Facility has more than one Furnace subject to the same  
13 emission limit (e.g., 1.3 lb/ton for Oxyfuel or 3.8 lb/ton for OEAS)  
14 compliance with the 30-day rolling limits set forth herein may be determined  
15 by averaging the emissions from all Furnaces subject to the same emission  
16 limit at a given facility.

17 k. Where a Facility has more than one Furnace routed through the same  
18 stack, but the Furnaces are not subject to the same emission limit,  
19 compliance shall be demonstrated using CEMS measuring each Furnace  
20 exhaust prior to the combination of the Furnace exhaust. However, if the



1 exhaust system configuration prevents SGCI from installing a CEMS in each  
2 Furnace individually, compliance may be demonstrated by measuring the  
3 exhaust from one Furnace prior to the combined exhaust and measuring the  
4 total emissions after the stacks are combined (which will be used to  
5 determine emissions from the 2<sup>nd</sup> Furnace by subtracting the first Furnace's  
6 emission rate from the common exhaust emission rate).

7 l. No later than one year after the installation of Oxyfuel technology on  
8 Furnace #16 at Milford, SGCI shall install a Heat Recovery System at the  
9 Milford Facility. The System shall be designed to reduce or eliminate the  
10 energy demand of the Facility from external sources. SGCI must apply for a  
11 plan approval under 310 C.M.R. 7.02, if required by law, for this system  
12 twelve (12) months prior to the installation and comply with any monitoring,  
13 record keeping, and/or reporting required by law. This system must be  
14 constructed and operated in compliance with all applicable Federal and State  
15 laws.

16 **8. SO<sub>2</sub> Emission Controls, Limits, and Compliance Schedule**

17 a. Interim SO<sub>2</sub> Emission Limit:

- 18 i. On and after the first stack test following the Date of Entry  
19 (and on and after thirty (30) Days after the Date of Entry for  
20 a Furnace which has a certified SO<sub>2</sub> CEMS on the Date of

1 Entry), all SGCI Furnaces listed in Table 3 below shall  
2 meet an interim limit of 2.5 pounds of SO<sub>2</sub> per ton of glass  
3 produced except during periods of Abnormally Low  
4 Production Rate Days, Furnace Startup, Malfunction,  
5 Maintenance, and Color Transition. This interim limit shall  
6 remain in effect until the Furnace is required to comply  
7 with an SO<sub>2</sub> emission limit specified in Paragraph 8  
8 Subsections 8.c. through e. and g.

9 ii. Except for the Dolton Facility, prior to SO<sub>2</sub> CEMS  
10 installation and Certification, compliance with the interim  
11 SO<sub>2</sub> emission limit shall be demonstrated by conducting an  
12 EPA Method 6C (40 C.F.R. Part 60 Appendix A) source  
13 test. Testing shall be conducted initially no later than  
14 twelve (12) months after the Date of Entry and once each  
15 Calendar Year thereafter until SO<sub>2</sub> CEMS are installed and  
16 certified. A source test is not required the year that a SO<sub>2</sub>  
17 CEMS is installed.

18 iii. Emission Rate 30-day Rolling Average Limit – Upon SO<sub>2</sub>  
19 CEMS installation and Certification, SGCI shall not emit  
20 more than 2.5 pounds of SO<sub>2</sub> per ton of glass produced on a



30-day Rolling Average, as measured using an SO<sub>2</sub> CEMS, except during the following periods (as set forth in this Subparagraph): Abnormally Low Production Rate Days; Furnace Startup; Malfunction of the Furnace; Color Transition; and Maintenance of the Furnace.

1. SO<sub>2</sub> Limit during Abnormally Low Production Rate Days – For any Abnormally Low Production Rate Day SGCI may elect to exclude the emissions generated during that Day from the Emission Rate 30-day Rolling Average when any Furnace, or any one of the Furnaces that is ducted through the same exhaust stack, is Operating at an Abnormally Low Production Rate. During these Days, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit for the Furnace(s) operating at Abnormally Low Production Rate.

$$SO_{2 \text{ Interim Abn}} = 2.5 \frac{\text{lb } SO_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right]$$

Where: SO<sub>2 Interim Abn</sub> = SO<sub>2</sub> interim emission limit for a Furnace during an Abnormally Low Production Rate Day, in pounds per day.



P = Furnace-specific production threshold as defined in Paragraph 10, in tons of glass produced per day.

2. SO<sub>2</sub> limit during Furnace Startup –SGCI shall comply with the following operational limit to limit SO<sub>2</sub> emissions during all phases of Furnace Startup:
  - a. During the startup period, SGCI will limit the amount of sulfur added to the batch materials to 2.6 pounds per ton of total batch material (including cullet) or less.
3. SO<sub>2</sub> limit during Malfunction – For any Operating Day where a Malfunction of the Furnace occurs for any period of time, SGCI may elect to exclude the emissions generated during that Operating Day (or Operating Days if the event covers more than one Operating Day) from the Emission Rate 30-day Rolling Average when any Furnace, or any one of the Furnaces that is ducted through the same exhaust stack, has a Malfunction. During the Malfunction Days excluded from the Emission Rate 30-day Rolling Average, a CEMS shall be used to



demonstrate compliance on a 24-hour Block  
Average with the following pound per day limit for  
the Malfunctioning Furnace(s):

$$SO_{2 \text{ Interim Malf}} = 3 \times SO_{2 \text{ Interim Abn}}$$

Where:  $SO_{2 \text{ Interim Malf}}$  =  $SO_2$  interim emission limit  
for a Furnace during a Malfunction Day, in  
pounds per day.  
 $SO_{2 \text{ Interim Abn}}$  = As defined in Paragraph  
8.a.iii.1,  $SO_2$  interim emission limit for a  
Furnace during an Abnormally Low  
Production Rate Day, in pounds per day.

4.  $SO_2$  limit during Maintenance – For any Operating  
Day where Maintenance activities on the Furnace  
are performed, SGCI may elect to exclude the  
Maintenance Day from the Emission Rate 30-day  
Rolling Average when any Furnace, or any one of  
the Furnaces that is ducted through the same  
exhaust stack, undergoes Maintenance. For any  
Day which is excluded from the 30-day rolling  
average, a CEMS shall be used to demonstrate  
compliance on a 24-hour Block Average with the  
following pound per day limit for the Furnace(s)  
undergoing Maintenance:

$$SO_{2 \text{ Interim Maint}} = \frac{MH \times [3 \times SO_{2 \text{ Interim Abn}}]}{24} + \frac{NH \times [SO_{2 \text{ Interim Abn}}]}{24}$$

Where:  $SO_{2 \text{ Interim Maint}}$  =  $SO_2$  interim emission limit for a Furnace during a Maintenance Day, in pounds per day.

$SO_{2 \text{ Interim Abn}}$  = As defined in Paragraph 8.a.iii.1,  $SO_2$  interim emission limit for a Furnace during an Abnormally Low Production Rate Day, in pounds per day.

MH = Hours of Maintenance

NH = Normal Hours = 24 – MH

#### 5. $SO_2$ limit during Color Transition – For any

Operating Days during which a Color Transition is occurring SGCI may elect to exclude the emissions on such Days from the Emission Rate 30-day Rolling Average when any Furnace, or any one of the Furnaces that is ducted through the same exhaust stack, has a Color Transition. During these Days, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit for the Furnace(s) having a Color Transition:

$$SO_{2 \text{ Interim Col Tran}} = 2 \times SO_{2 \text{ Interim Abn}}$$

Where:  $SO_{2 \text{ Interim Col Tran}}$  =  $SO_2$  interim emission limit for a Furnace during a Color Transition, in pounds per day.

SO<sub>2</sub> Interim Abn = As defined in Paragraph  
8.a.iii.1, SO<sub>2</sub> interim emission limit for a  
Furnace during an Abnormally Low  
Production Rate Day, in pounds per day.

- iv. At Facilities with more than one Furnace subject to an interim limit, compliance may be determined by averaging the emissions from all such Furnaces at a given Facility.
- v. When one or more Furnace(s) Operating under normal conditions are ducted through the same exhaust stack as one or more Furnace(s) that are Operating at an Abnormally Low Production Rate, has a Malfunction, undergoes Maintenance, or has a Color Transition, the combined daily emission limit for the Furnaces shall be the sum of the following SO<sub>2</sub> Normal Lb/day limit for the normally Operating Furnace(s) and the relevant limit set forth in Paragraph 8(a)(iii)(1), (3), (4), or (5) for the remaining Furnace(s).

$$SO_{2 \text{ Normal lb/day}} = 2.5 \frac{\text{lb } SO_2}{\text{ton}} \times ADP$$

Where: SO<sub>2</sub> Normal lb/day = SO<sub>2</sub> interim emission limit for a normally Operating Furnace during a day where a commonly ducted furnace is experiencing an event a set forth in Paragraph 8(a)(iii)(1), (3), (4), or (5).

ADP = Actual Daily Production for the  
normally Operating Furnace.

vi. For the Dolton Facility, prior to SO<sub>2</sub> CEMS installation and Certification, compliance with the interim SO<sub>2</sub> emission limit shall be demonstrated by conducting an EPA Method 6C (40 C.F.R. Part 60 Appendix A) source test. Testing shall be conducted initially no later than December 31, 2009, and then once again after December 31, 2010, but no later than December 31, 2011, for all three Furnaces.

b. SO<sub>2</sub> Emission Controls and Compliance Schedule

i. SGCI shall operate one of the SO<sub>2</sub> emission control devices specified for that Furnace in Table 3.

Table 3 – SO<sub>2</sub> Emission Controls and Compliance Schedule

| <u>Facility</u>       | <u>Controls</u>                                      | <u>Deadline</u>   |
|-----------------------|--|-------------------|
| Seattle #5            | CCSS – See Section 8.f.                              | See Section 8.f.  |
| Milford #15 & #16     | Semi-dry Scrubber or CCSS – See Section 8.c. or 8.e. | December 31, 2015 |
| Dunkirk #1 & #2       | Semi-dry Scrubber or CCSS – See Section 8.c. or 8.e. | December 31, 2012 |
| Waxahachie            | Semi-dry Scrubber or CCSS – See Section 8.c. or 8.e. | December 31, 2013 |
| Pevely #20 & #21      | Semi-dry Scrubber or CCSS – See Section 8.c. or 8.e. | December 31, 2013 |
| Dolton #1, #2, & #3   | Dry Scrubber – See Section 8.d.                      | December 31, 2014 |
| Port Allegany #1 & #3 | Process controls – See Section 8.g.                  | See Section 8.g.  |
| Henderson #1          | Process controls – See Section 8.g.                  | See Section 8.g.  |
| Henderson #2          | Process controls – See Section 8.g.                  | See Section 8.g.  |



|               |                                     |                  |
|---------------|-------------------------------------|------------------|
| Lincoln       | Process controls – See Section 8.g. | See Section 8.g. |
| Burlington #6 | Process controls – See Section 8.g. | See Section 8.g. |
| Burlington #7 | Process controls – See Section 8.g. | See Section 8.g. |
| Sapulpa #50   | Process controls – See Section 8.g. | See Section 8.g. |
| Sapulpa #51   | Process controls – See Section 8.g. | See Section 8.g. |
| Sapulpa #52   | Process controls – See Section 8.g. | See Section 8.g. |
| Ruston #1     | Process controls – See Section 8.g. | See Section 8.g. |
| Ruston #2     | Process controls – See Section 8.g. | See Section 8.g. |
| Seattle #2    | Process controls – See Section 8.g. | See Section 8.g. |
| Seattle #3    | Process controls – See Section 8.g. | See Section 8.g. |
| Seattle #4    | Process controls – See Section 8.g. | See Section 8.g. |
| Wilson #28    | Process controls – See Section 8.g. | See Section 8.g. |
| Wilson #29    | Process controls – See Section 8.g. | See Section 8.g. |

c. For Furnaces with Semi-dry Scrubbers

- i. After the next Major Rebuild (except Milford Furnace #15 and Pevely Furnace #21), but no later than the first Operating Day after the dates specified in Table 3, SGCI shall Operate the Furnace passing all stack gases through a Semi-dry Scrubber except during periods of Control Device Startup, up to the first seven (7) days of the Furnace Startup, and during Malfunction of the Scrubber System or ESP and Maintenance on the Scrubber System or ESP.

je

1                   ii. SGCI shall comply with the following applicable SO<sub>2</sub> limits

2                   for Furnaces with Semi-dry Scrubbers:

3                   1. SO<sub>2</sub> 30-day rolling average limit – Commencing on

4                   the first Operating Day after completion of the

5                   Control Device Startup and CEMS Certification,

6                   but no later than the date specified in Table 3, a

7                   Furnace equipped with a Semi-dry Scrubber shall

8                   comply with the following limits as measured using

9                   an SO<sub>2</sub> CEMS, except during the following periods

10                  (as set forth in this Subparagraph): Control Device

11                  Startup, Furnace Startup, Malfunction of the

12                  Scrubber System or ESP, and Maintenance of the

13                  Scrubber System or ESP.

14                  a. No dilution air will be intentionally added to

15                  the stack gases between the Scrubber System

16                  and the CEMS. When determining

17                  compliance with all Scrubber System limits,

18                  there shall be no oxygen correction, as per

19                  vendor guarantee.

1 b. SGCI shall determine a daily Inlet 24-hour  
2 Block Average. The 30-day rolling average  
3 compliance limit for each Operating Day will  
4 depend on the daily Inlet 24-hour Block  
5 Average and will either be as defined in  
6 8.c.ii.1.c. or 8.c.ii.1.d., but not both.

7 c. If the average daily Inlet calculated in  
8 8.c.ii.1.b. is equal to or greater than 300 parts  
9 per million by volume dry (ppmvd) then the  
10 Removal Efficiency on a 24-hour Block  
11 Average for that Day and a Removal  
12 Efficiency 30-day Rolling Average shall be  
13 calculated. SGCI must operate the Semi-dry  
14 Scrubber such that the Removal Efficiency  
15 30-day Rolling Average is greater than or  
16 equal to 85 percent.

17 d. If the average daily Inlet calculated in  
18 8.c.ii.1.b. is less than 300 ppmvd, then the  
19 Scrubber Outlet 24-hour Block Average  
20 concentration for that Day and Scrubber

1 Outlet 30-day Rolling Average shall be  
2 calculated. SGCI must operate the Semi-dry  
3 Scrubber such that the Scrubber Outlet 30-  
4 day Rolling Average is less than or equal to  
5 45 ppmvd.

6 2. SO<sub>2</sub> limit during Control Device Startup or up to  
7 the first Seven (7) Days of Furnace Startup –SGCI  
8 shall comply with the following operational limit to  
9 limit SO<sub>2</sub> emissions during all phases of Control  
10 Device Startup or Furnace Startup:

11 a. During the startup period, SGCI will limit the  
12 amount of sulfur added to the batch materials  
13 to 2.6 pounds per ton of total batch material  
14 (including cullet) or less.

15 b. During no more than the first seven (7) Days  
16 of Furnace Startup, the Furnace exhaust may  
17 bypass the Scrubber System to avoid having  
18 the operating inlet temperature of the  
19 Scrubber System fall below its operational  
20 range. During these bypass Days, SGCI shall



burn no more than 15.0 million standard

cubic feet of natural gas in that Furnace.

### 3. SO<sub>2</sub> limit during Malfunction of the Scrubber

System or ESP – For any Operating Day where a Malfunction of the Scrubber System or ESP occurs for any period of time, SGCI may elect to exclude the emissions generated during that Operating Day (or Operating Days if the event covers more than one Operating Day) from the Removal Efficiency 30-day Rolling Average and Scrubber Outlet 30-day Rolling Average emission rates . During the Malfunction Days excluded from the Removal Efficiency 30-day Rolling Average and Scrubber Outlet 30-day Rolling Average emission rates , a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$SO_{2 \text{ Scrub Malf}} = 2.5 \frac{\text{lb } SO_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right]$$

Where: SO<sub>2 Scrub Malf</sub> = SO<sub>2</sub> emission limit for a Furnace with a Semi-dry Scrubber during a Malfunction Day, in pounds per day.

P = Furnace-specific production threshold as defined in Paragraph 10, in tons of glass produced per day.

#### 4. SO<sub>2</sub> limit during Maintenance of the Scrubber

System— For any Operating Day where

Maintenance activities on the Scrubber System or

ESP are performed, SGCI may elect to exclude the

Maintenance Day from the Removal Efficiency 30-

day Rolling Average and Scrubber Outlet 30-day

Rolling Average emission rates. For any Day

which is excluded from the 30-day Rolling

Average, a CEMS shall be used to demonstrate

compliance on a 24-hour Block Average with the

following pound per day:

$$SO_2 \text{ Scrub Maint} = \frac{MH \times \left[ 2.5 \frac{\text{lb SO}_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right] \right]}{24} + \frac{NH \times \left[ \frac{1}{8} \times 2.5 \frac{\text{lb SO}_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right] \right]}{24}$$

Where: SO<sub>2</sub> Scrub Maint = SO<sub>2</sub> emission limit for a Furnace with a Semi-Dry Scrubber during a Maintenance Day, in pounds per day.  
P = Furnace-specific production threshold as defined in Paragraph 10 in tons of glass produced per day.  
MH = Hours of Maintenance  
NH = Normal Hours = 24 – MH

d. For the Furnaces Equipped with Dry Scrubbers

- 1 i. No later than the first Operating Day after the dates  
2 specified in Table 3, SGCI shall Operate the Furnace  
3 passing all stack gases through a Dry Scrubber except  
4 during periods of Control Device Startup, up to the first  
5 seven (7) days of the Furnace Startup, and during  
6 Malfunction of the Scrubber System or ESP and  
7 Maintenance on the Scrubber System or ESP.
- 8 ii. SGCI shall comply with the following applicable SO<sub>2</sub> limits  
9 for Furnaces with Dry Scrubbers:
- 10 1. SO<sub>2</sub> 30-day Rolling Average Limit – Commencing  
11 on the first Operating Day after completion of the  
12 Control Device Startup and CEMS Certification,  
13 but no later than the date specified in Table 3, a  
14 Furnace equipped with a Dry Scrubber shall  
15 comply with the following limits as measured using  
16 an SO<sub>2</sub> CEMS, except during the following periods  
17 (as set forth in this Subparagraph): Control Device  
18 Startup, up to the first seven (7) days of Furnace  
19 Startup, Malfunction of the Scrubber System or



1 ESP, and Maintenance of the Scrubber System or  
2 ESP.

3 a. No dilution air will be intentionally added to  
4 the stack gases between the Scrubber System  
5 and the CEMS. When determining  
6 compliance with all Scrubber limits, there  
7 shall be no oxygen correction, as per vendor  
8 guarantee.

9 b. SGCI shall determine a daily Inlet 24-Hour  
10 Block Average. The compliance limit for  
11 each Operating Day will depend on the daily  
12 Inlet 24-hour Block Average and will either  
13 be as defined in 8.d.ii.1.c. or 8.d.ii.1.d., but  
14 not both.

15 c. If the average daily Inlet calculated in  
16 Subparagraph 8.d.ii.1.b is equal to or greater  
17 than 167 parts per million by volume dry  
18 (ppmvd) then the Removal Efficiency on a  
19 24-hour Block Average for that Day and a  
20 Removal Efficiency 30-day Rolling Average

1 shall be calculated. SGCI must operate the  
2 Dry Scrubber such that the Removal  
3 Efficiency 30-day Rolling Average is greater  
4 than or equal to 70 percent.

5 d. If the average daily Inlet calculated in  
6 Subparagraph 8.d.ii.1.b. is less than 167  
7 ppmvd, then the Outlet 24-hour Block  
8 Average for that Day and Outlet 30-day  
9 Rolling Average shall be calculated. SGCI  
10 must operate the Dry Scrubber such that the  
11 Outlet 30-day Rolling Average is less than or  
12 equal to 50 ppmvd.

13 2. SO<sub>2</sub> limit during Control Device Startup or up to  
14 the first seven (7) days of Furnace Startup –SGCI  
15 shall comply with the following operational limit to  
16 limit SO<sub>2</sub> emissions during all phases of Control  
17 Device Startup or up to the first seven (7) days of  
18 Furnace Startup:

19 a. During the startup period, SGCI will limit the  
20 amount of sulfur added to the batch materials

1 to 2.6 pounds per ton of total batch material  
2 (including cullet) or less.

3 b. For no more than the first seven (7) Days of  
4 Furnace Startup, the Furnace exhaust may  
5 bypass the Scrubber System to avoid having  
6 the operating inlet temperature of the  
7 Scrubber System fall below its operational  
8 range. During these bypass Days, SGCI shall  
9 burn no more than 15.0 million standard  
10 cubic feet of natural gas in that furnace.

11 3. SO<sub>2</sub> limit during Malfunction of the Scrubber  
12 System or ESP – For any Operating Day where a  
13 Malfunction of the Scrubber System or ESP occurs  
14 for any period of time, SGCI may elect to exclude  
15 the emissions generated during that Operating Day  
16 (or Operating Days if the event covers more than  
17 one Operating Day) from the Removal Efficiency  
18 30-day Rolling Average and Scrubber Outlet 30-  
19 day Rolling Average emission rates. During the  
20 Malfunction Days excluded from the Removal

Efficiency 30-day Rolling Average and Scrubber  
Outlet 30-day Rolling Average emission rates, a  
CEMS shall be used to demonstrate compliance on  
a 24-hour Block Average with the following pound  
per day limit:

$$SO_{2 \text{ Scrub Malf}} = 2.5 \frac{\text{lb } SO_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right]$$

Where:  $SO_{2 \text{ Scrub Malf}}$  =  $SO_2$  emission limit for a  
Furnace with a Dry Scrubber during a  
Malfunction Day, in pounds per day.  
P = Furnace-specific production threshold as  
defined in Paragraph 10, in tons of glass  
produced per day.

4.  $SO_2$  limit during Maintenance of the Scrubber

System or ESP— For any Operating Day where  
Maintenance activities on the Scrubber System or  
ESP are performed, SGCI may elect to exclude the  
Maintenance Day from the Removal Efficiency 30-  
day Rolling Average and Scrubber Outlet 30-day  
Rolling Average emission rates. For any  
Maintenance Day which is excluded from the 30-  
day Rolling Average, a CEMS shall be used to

demonstrate compliance on a 24-hour Block

Average with the following pound per day limit:

$$SO_{2 \text{ Scrub Maint}} = \frac{MH \times \left[ 2.5 \frac{\text{lb } SO_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right] \right]}{24} + \frac{NH \times \left[ \frac{2}{3} \times 2.5 \frac{\text{lb } SO_2}{\text{ton}} \times \left[ \frac{P}{0.35} \right] \right]}{24}$$

Where:  $SO_{2 \text{ Scrub Maint}}$  =  $SO_2$  emission limit for a Furnace with a Dry Scrubber during a Maintenance Day, in pounds per day  
 P = Furnace-specific production threshold as defined in Paragraph 10, in tons of glass produced per day  
 MH = Hours of Maintenance  
 NH = Normal Hours = 24 – MH

e. For Furnaces with Cloud Chamber Scrubber Systems

- i. SGCI may install a CCSS instead of a Semi-dry Scrubber under Paragraph 8.c. For any Furnace which SGCI elects to use a CCSS, after up to the first seven (7) days of the Furnace Startup after the next Major Rebuild, but no later than the first Operating Day after the dates specified in Table 3, SGCI shall Operate the Furnace passing all stack gases through the CCSS except during periods of Control Device Startup, Malfunction of the CCSS and Maintenance on the CCSS. If SGCI uses a CCSS in lieu of a Semi-dry Scrubber, it must notify the United States and the State.



1                   ii. SO<sub>2</sub> 30-day Rolling Average Limit – Commencing on the  
2                   first Operating Day after completion of the Control Device  
3                   Startup and CEMS Certification, but no later than the date  
4                   specified in Table 3, SGCI shall comply with all  
5                   requirements in 8.c.ii.

6                   iii. Compliance with the above emissions limitations shall be  
7                   measured using an SO<sub>2</sub> CEMS.

8           f.     Seattle #5 Cloud Chamber Scrubber System – SGCI installed a CCSS  
9           on the Seattle Furnace #5 in 2007. If SGCI removes or discontinues  
10          operation of the CCSS, it shall, within 9 months of permanently ceasing to  
11          operate the CCSS, construct and operate a Semi-dry Scrubber in order to  
12          pass all stack gases through a Semi-dry Scrubber that meets the emissions  
13          standards in 8.c.ii.

14          g.     For Furnaces listed in Table 4

15                   i. Process controls may include technologies and methods that  
16                   are currently undertaken or will be undertaken to reduce  
17                   SO<sub>2</sub> emissions.

18                   ii. Process controls shall be implemented at the following  
19                   Furnaces and will be referred to as “Furnaces listed in Table  
20                   4.”

Table 4 – Process-Controlled Furnaces

|                          |
|--------------------------|
| Port Allegany Furnace #1 |
| Port Allegany Furnace #3 |
| Henderson Furnace #1     |
| Henderson Furnace #2     |
| Wilson Furnace #28       |
| Wilson Furnace #29       |
| Burlington Furnace #6    |
| Burlington Furnace #7    |
| Sapulpa Furnace #50      |
| Sapulpa Furnace #51      |
| Sapulpa Furnace #52      |
| Lincoln Furnace          |
| Ruston Furnace #1        |
| Ruston Furnace #2        |
| Seattle Furnace #2       |
| Seattle Furnace #3       |
| Seattle Furnace #4       |

1                   iii. By no later than June 30, 2015, SGCI shall submit a

2                   complete application to the State/local permitting authority

3                   for two federally-enforceable SO<sub>2</sub> emission limits measured

4                   on a 30-day Rolling Average Emission Rate for each of the

5                   Furnaces listed in Table 4. One limit applies during times

6                   when the Furnace is producing flint (clear) glass and the

7                   other applies when the Furnace is producing colored (any

8                   other) glass. Both limits must be expressed in the form of

pounds of SO<sub>2</sub> per ton of glass produced. No proposed SO<sub>2</sub> limit can be higher than 2.5 pounds per ton of glass produced, determined as a 30-day rolling average. The limit shall apply during all Operating Days except during Furnace Startup, Maintenance of the Furnace, Malfunction of the Furnace, Color Transition, and Abnormally Low Production Rate Days. For these exception periods, SGCI shall obtain federally-enforceable SO<sub>2</sub> emission limits as follows:

1. SO<sub>2</sub> Limit during Abnormally Low Production Rate Days – For any Abnormally Low Production Rate Day SGCI may elect to exclude the emissions generated during that Day from the Emission Rate 30-day Rolling Average. During these Days, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$SO_{2\ 2nd\ Abn} = [Applicable\ Permit\ Limit] \frac{lb\ SO_2}{ton} \times \left[ \frac{P}{0.35} \right]$$

Where: SO<sub>2 2nd Abn</sub> = SO<sub>2</sub> emission limit for a Furnace listed in Table 4 during an

Abnormally Low Production Rate Day, in pounds per day.

Applicable Permit Limit = This is the permit limit that SGCI receives for each Furnace listed in Table 4 under Paragraph 8.g.iii for Color or Flint, whichever is currently being melted, in lb SO<sub>2</sub> per ton of glass.

P = Furnace-specific production threshold as defined in Paragraph 10, in tons of glass produced per day.

2. SO<sub>2</sub> limit during Furnace Startup –SGCI shall comply with the following operational limit to limit SO<sub>2</sub> emissions during all phases of Furnace Startup:
- a. During the startup period, SGCI will limit the amount of sulfur added to the batch materials to 2.6 pounds per ton of total batch material (including cullet) or less.

3. SO<sub>2</sub> limit during Malfunction of the Furnace – For any Operating Day where a Malfunction of the Furnace system occurs for any period of time, SGCI may elect to exclude the emissions generated during that Operating Day (or Operating Days if the event covers more than one Operating Day) from the Emission Rate 30-day Rolling Average. During

the Malfunction Days excluded from the Emission Rate 30-day Rolling Average, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$SO_{2\ 2nd\ Malf} = 3 \times 2.5 \frac{lb\ SO_2}{ton} \times \left[ \frac{P}{0.35} \right]$$

Where:  $SO_{2\ 2nd\ Malf}$  =  $SO_2$  emission limit for a Furnace listed in Table 4 during a Malfunction Day, in pounds per day.  
P = Furnace-specific production threshold as defined in Paragraph 10 in tons of glass produced per day.

4.  $SO_2$  limit during Maintenance – For any Operating Day where Maintenance activities on the Furnace are performed, SGCI may elect to exclude the Maintenance Day from the Emission Rate 30-day Rolling Average. For any Day which is excluded from the 30-day Rolling Average, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$SO_{2\ 2nd\ Maint} = \frac{MH \times \left[ 3 \times 2.5 \frac{lb\ SO_2}{ton} \times \left[ \frac{P}{0.35} \right] \right]}{24} + \frac{NH \times \left[ \frac{P}{0.35} \right] \times [App\ Limit] \frac{lb\ SO_2}{ton}}{24}$$

Where:  $SO_{2\ 2nd\ Maint} = SO_2$  emission limit for a Furnace listed in Table 4 during a Maintenance Day, in pounds per day.  
 $P$  = Furnace-specific production threshold as defined in Paragraph 10 in tons of glass produced per day.  
 $MH$  = Hours of Maintenance  
 $NH$  = Normal Hours = 24 –  $MH$   
 $App\ Limit$  = This is the permit limit that SGCI receives for each Furnace listed in Table 4 under Paragraph 8.g.iii for Color or Flint, whichever is currently being melted, in lb  $SO_2$  per ton of glass.

5.  $SO_2$  limit during Color Transition – For any Operating Day on which a Color Transition occurs SGCI may elect to exclude the emissions generated during that Day from the Emission Rate 30-day Rolling Average. During these Days, a CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per day limit:

$$SO_{2\ 2nd\ Col\ Tran} = 2 \times 2.5 \frac{lb\ SO_2}{ton} \times \left[ \frac{P}{0.35} \right]$$

Where:  $SO_{2\ 2nd\ Col\ Tran} = SO_2$  emission limit for a Furnace listed in Table 4 during a Color Transition Day, in pounds per day.  
 $P$  = Furnace-specific production threshold as defined in Paragraph 10, in tons of glass produced per day.

- 1                   iv. Following the submission of a complete permit application,  
2                   SGCI shall cooperate with the applicable State/local  
3                   permitting authority by promptly submitting all information  
4                   requested by the State/local permitting authority.
- 5                   v. At the Wilson Facility, by December 31, 2011, SGCI shall  
6                   apply for SO<sub>2</sub> limits of 400 tons of SO<sub>2</sub> per Calendar Year  
7                   for Furnaces #28 and #29 combined, as measured by SO<sub>2</sub>  
8                   CEMS.
- 9                   vi. By no later than June 30, 2015, SGCI shall apply for  
10                  permanent SO<sub>2</sub> emission limits in compliance with 8.g.iii-  
11                  xii. for all Furnaces listed in Table 4 through Permits issued  
12                  by the State/local agency.
- 13                  vii. SGCI shall continuously comply with each proposed SO<sub>2</sub>  
14                  emission limit starting on the date of the Permit application  
15                  and throughout the duration of the Consent Decree except  
16                  during periods of Abnormally Low Production Rate Days,  
17                  Furnace Startup, Malfunction of the Furnace, Maintenance  
18                  of the Furnace, and Color Transition.
- 19                  viii. An SO<sub>2</sub> CEMS shall be used to demonstrate compliance  
20                  with the SO<sub>2</sub> limits for Furnaces listed in Table 4.

- ix. Once all Furnaces listed in Table 4 have received a Permit with 30-day Rolling Average limits for flint glass, the SO<sub>2</sub> System-wide Weighted Average of 30-day Rolling Average Emission Rate Permit Limits of all Furnaces listed in Table 4 obtained for flint glass shall not be greater than 1.95 pounds of SO<sub>2</sub> per ton of glass produced.
- x. Once all Furnaces listed in Table 4 have received a Permit with 30-day Rolling Average limits for colored glass, the SO<sub>2</sub> System-wide Weighted Average of 30-day Rolling Average Emission Rate Permit Limits of all Furnaces listed in Table 4 obtained for colored glass shall not be greater than 2.25 pounds of SO<sub>2</sub> per ton of glass produced.
- xi. Beginning in the 2011 Calendar Year and ending on December 31, 2015, SGCI shall achieve System-wide Weighted Annual Average Actual Emissions of no greater than 1.95 pounds of SO<sub>2</sub> per ton of glass produced. Each year the weighted average will include all Furnaces listed in Table 4 equipped with CEMS and will include emissions and production from any color of glass. This limit shall include emissions from all times the Furnaces are firing fuel





1 except Abnormally Low Production Rate Days, Furnace  
2 Startup, Malfunction, Maintenance of the Furnace, and  
3 Color Transition.

4 xii. By no later than 6 months after all Furnaces listed in Table  
5 4 have received Permits with 30-day Rolling Average limits  
6 for flint and colored glass, SGCI shall submit a report that  
7 demonstrates compliance with Paragraph 8.g.ii. to 8.g.xi.  
8 including, but not limited to, all applicable Permits  
9 containing the SO<sub>2</sub> emission limits for the Furnaces listed in  
10 Table 4 and a calculation of the SO<sub>2</sub> System-wide Weighted  
11 Average Permit Limit for flint under Paragraph 8.g.ix. and  
12 colored glass under Paragraph 8.g.x.

13 h. Monitoring: A CEMS, if available, shall be used to demonstrate  
14 compliance with the SO<sub>2</sub> limits in Paragraphs 8.c. through 8.g. using data  
15 generated by the SO<sub>2</sub> CEMS. If the Facility does not have a CEMS when it  
16 is required to meet the limit in Paragraphs 8.c. through 8.g. above,  
17 compliance shall be demonstrated using data generated from annual stack  
18 tests complying with 40 C.F.R. Part 60 Appendix A. If a CEMS  
19 Certification Event occurs, then the requirement to demonstrate compliance  
20 continuously with the limit for that Furnace will be suspended until

1 Certification is completed (provided the seven-day test required for  
2 Certification is commenced the first Operating Day following the conclusion  
3 of the CEMS Certification Event).

4 i. Existing State/Local Limits: The limits in Paragraph 8 do not replace  
5 any current State/local limits and do not relieve SGCI of its obligation to  
6 comply with those limits.

7 j. Recordkeeping: For any Operating Day that SGCI is excluding  
8 emissions from the relevant Emission Rate 30-day Rolling Average, it shall  
9 record the date, the exception (Abnormally Low Production Rate Day,  
10 Furnace Startup, Furnace Malfunction, Furnace Maintenance, or Color  
11 Transition) under which it is excluded, a calculation of the applicable limit  
12 (pounds per day) according to the equations above, and the recorded  
13 emissions according to the CEMS, if a certified CEMS is available ( in  
14 pounds per day).

15 k. Recordkeeping and Reporting during Furnace Startup: In addition to  
16 the record keeping in Subparagraph j. above, during all Furnace Startup  
17 phases SGCI must also keep the following records:

18 i. During the startup period, SGCI will record the amount of  
19 sulfur added to the batch materials in pounds per ton of  
20 total batch material.

1. Where a Facility has more than one Furnace subject to the same emission limit, compliance with the 30-day rolling average limits set forth herein may be determined by averaging the emissions from all Furnaces subject to the same emission limit at a given Facility.

m. For the Furnaces at Burlington, Wilson, and Seattle, the limits set forth in or determined in accordance with Paragraph 8 shall be increased by 2.0 pounds per ton when burning fuel oil. If additional Furnaces are allowed by a Permit to burn fuel oil, the required limit under this Consent Decree shall be increased by 2.0 pounds per ton for periods when burning fuel oil.

No Furnace may combust fuel oil which has a sulfur content in excess of 0.5 percent, by weight.

n. Compliance with a Sulfuric Acid Mist emission limit of 1.0 pounds per ton of glass produced shall be demonstrated by a stack test performed using Conditional Test Method 13A or B on all Furnaces on or before December 31, 2011. Stack testing shall be required to be performed after this initial test only once during the life of each Title V permit renewal.

**9. PM Emission Controls, Limits, and Compliance Schedule**

a. Interim PM Emission Limit:

i. On and after the first stack test following the Date of Entry,

SGCI shall comply with an interim PM emission limit of

1 1.0 pound of filterable PM per ton of glass produced on all  
2 glass Furnaces listed in Table 5 (except for Milford #15 and  
3 #16, and Seattle #5).

4 ii. Except for the Dolton facility, compliance with this interim  
5 PM emission limit shall be demonstrated by conducting an  
6 EPA Method 5 (40 C.F.R. Part 60 Appendix A) source test.  
7 Testing shall be conducted initially no later than 12 months  
8 after the Date of Entry and once each Calendar Year  
9 thereafter.

10 iii. For the Dolton Facility, compliance with the interim PM  
11 emission limit shall be demonstrated by conducting an EPA  
12 Method 5 (40 C.F.R. Part 60 Appendix A) source test on  
13 each of the three Furnaces. Testing on each of the three  
14 Furnaces shall be conducted initially no later than  
15 December 31, 2009, and then once again between January  
16 1, 2011, and December 31, 2011.

17 iv. The interim PM emission limit shall remain in effect until  
18 the Furnace is required to comply with a PM emission limit  
19 specified in Paragraph 9.c. through 9.h. below. Stack  
20 testing for demonstration of compliance with interim limits



shall not be required in a Calendar Year during which compliance with limits determined under Paragraphs 9.c. or 9.d. is demonstrated.

b. PM Emission Controls and Compliance Schedule

i. For each Furnace in Table 5, SGCI shall operate one of the PM emission control devices or methods specified for that Furnace in Table 5.

Table 5 – Controls for Particulate Matter and Compliance Schedule

| <u>Facility and Furnace #</u> | <u>Controls</u>                              | <u>Deadline</u>   |
|-------------------------------|--|-------------------|
| Seattle #5                    | CCSS – See Section 9.e.                      | See Section 9.e.  |
| Milford #15 & #16             | Electrostatic Precipitator, or CCSS          | December 31, 2015 |
| Dunkirk #1 & #2               | Electrostatic Precipitator, or CCSS          | December 31, 2012 |
| Waxahachie                    | Electrostatic Precipitator, or CCSS          | December 31, 2013 |
| Pevely #20 & #21              | Electrostatic Precipitator, or CCSS          | December 31, 2013 |
| Dolton #1, #2, & #3           | Electrostatic Precipitator                   | December 31, 2014 |
| Port Allegany #1              | Process controls – See Section 9.f.          | December 31, 2009 |
| Port Allegany #3              | Process controls – See Section 9.f.          | December 31, 2013 |
| Henderson #1                  | Process controls – See Section 9.f.          | December 31, 2014 |
| Henderson #2                  | Process controls – See Section 9.f.          | December 31, 2009 |
| Lincoln                       | Process controls – See Section 9.f.          | December 31, 2016 |
| Burlington #6                 | Process controls – See Section 9.f.          | December 31, 2012 |
| Burlington #7                 | Process controls – See Section 9.f.          | December 31, 2013 |
| Sapulpa #50                   | Process controls – See Section 9.f.          | December 31, 2015 |
| Sapulpa #51                   | Process controls – See Section 9.f.          | December 31, 2010 |
| Sapulpa #52                   | Process controls – See Section 9.f.          | December 31, 2011 |
| Ruston #1                     | Process controls – See Section 9.f.          | December 31, 2012 |
| Ruston #2                     | Process controls – See Section 9.f. and 9.g. | December 31, 2012 |
| Seattle #2                    | Process controls – See Section 9.f.          | December 31, 2015 |
| Seattle #3                    | Process controls – See Section 9.f.          | December 31, 2015 |
| Seattle #4                    | Process controls – See Section 9.f.          | December 31, 2012 |

|            |  |                   |
|------------|--|-------------------|
| Wilson #28 | Process controls – See Section 9.f. and 9.h. | December 31, 2012 |
| Wilson #29 | Process controls – See Section 9.f. and 9.h. | December 31, 2012 |

c. For Furnaces with Electrostatic Precipitator

i. After up to the first seven (7) days of the Furnace Startup period following the next Major Rebuild (except Milford Furnace #15 and Pevely Furnace #21), but no later than the first Operating Day after the dates specified in Table 5, SGCI shall Operate the Furnace passing all stack gases through an Electrostatic Precipitator (ESP), except during periods of Control Device Startup, Malfunction of the ESP, and Maintenance of the ESP.

ii. SGCI shall comply with the PM emission limit of 0.2 pounds of filterable PM per ton of glass produced (or 0.26 pounds of filterable PM per ton of glass produced when the Furnace is fired on fuel oil) and 0.45 pounds of total PM per ton of glass produced (or 0.51 pounds of total PM per ton of glass produced when the Furnace is fired on fuel oil) for those Furnaces equipped with an ESP but no SCR. Furnaces equipped with an ESP and an SCR shall comply with the PM emission limit of 0.2 pounds of filterable PM

1 per ton of glass produced (or 0.26 pounds of filterable PM  
2 per ton of glass produced when the Furnace is fired on fuel  
3 oil); for such Furnaces there shall be no limit for total or  
4 condensable PM.

5 iii. Compliance with the PM limit shall be demonstrated  
6 through annual stack tests. SGCI shall conduct an initial  
7 stack test on each Furnace no later than twelve (12) months  
8 after the applicable compliance date listed in Table 5 and  
9 once each Calendar Year thereafter.

10 1. Filterable PM shall be determined using EPA  
11 Method 5 (40 C.F.R. Part 60 Appendix A).

12 2. Total PM shall be determined using Method 5 (40  
13 C.F.R. Part 60 Appendix A) and EPA Method 202  
14 (40 C.F.R. Part 51 Appendix M).

15 d. For Furnaces with Cloud Chamber Scrubber System

16 i. SGCI may install a CCSS instead of an ESP. For any Furnace  
17 where SGCI elects to use a CCSS instead of an ESP, after the  
18 first seven (7) days of the Furnace Startup period following  
19 next Major Rebuild, but no later than the first Operating Day  
20 after the dates specified in Table 5, SGCI shall Operate the

1 Furnace passing all stack gases through a CCSS except during  
2 periods of Control Device Startup, Malfunction of the CCSS,  
3 and Maintenance of the CCSS.

4 ii. If SGCI uses a CCSS in lieu of an ESP, it must notify the  
5 United States and the State.

6 iii. Any CCSS installed in lieu of an ESP (excluding the  
7 experimental CCSS installed on Seattle Furnace #5) shall  
8 comply with all requirements in 9.c.ii. and 9.c.iii.

9 e. Seattle #5 Cloud Chamber Scrubber System – SGCI installed a CCSS  
10 on the Seattle Furnace #5 in 2007. If SGCI removes or discontinues  
11 operation of the CCSS, it shall, within nine (9) months of permanently  
12 ceasing to operate the CCSS, construct and operate an ESP in order to pass  
13 all stack gases through an ESP that meets the emissions standards in 9.c.

14 f. PM Emission Limits for Furnaces listed in Table 4

15 i. For each Furnace listed in Table 4, SGCI shall comply with  
16 the PM emission limit of 1.0 pound of total PM per ton of  
17 glass produced for each Furnace by the dates specified in  
18 Table 5.

19 ii. Compliance with the PM limits in Paragraph 9.f.i. shall be  
20 demonstrated by annual stack tests. Total PM shall be